

ADDITIONAL NOTES ON THE ERIOCAULACEAE. LXIX

Harold N. Moldenke

SYNGONANTHUS AQUATICUS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 35: 322. 1977.

Citations: BRAZIL: Minas Gerais: A. Silveira 213 (B-isotype, Z-isotype).

SYNGONANTHUS AQUATICUS var. CAESPITOSUS Moldenke, Phytologia 24: 19. 1972.

Bibliography: Moldenke, Phytologia 24: 19 (1972) and 25: 230. 1973; Moldenke, Biol. Abstr. 55: 4242. 1973; Hocking, Excerpt. Bot. A.23: 291. 1974.

Citations: BRAZIL: Amazônas: France, Maas, Atchley, Steward, Woolcott, Coelho, Monteiro, Pinheiro, & Ramos 13778 (N-isotype, Z-type).

SYNGONANTHUS ARENARIUS (G. Gardn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 260. 1903.

Synonymy: Eriocaulon arenarium G. Gardn. in Hook., Lond. Journ. Bot. 1: 443—443, pl. 13. 1842 [not E. arenarium Mart., 1903, nor Salzm., 1850]. Paepalanthus arenarius Gardn. apud Walp., Ann. Bot. Syst. 1: 890. 1849. Eriocaulon arenarium Gardn. & Hook. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 333. 1855. Eriocaulon arenarium Hook. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 274. 1855. Paepalanthus arenarius (G. Gardn.) Körn. in Mart., Fl. Bras. 3 (1): 442. 1863. Paepalanthus arenarius Körn. in Mart., Fl. Bras. 3 (1): 284. 1863. Paepalanthus arenarius Gardn. ex Körn. in Mart., Fl. Bras. 3 (1): 307. 1863. Dupatya arenaria (G. Gardn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Paepalanthus arenarius Walp. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 401. 1894. Dupatya arenaria Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 445. 1902. Syngonanthus arenarius Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908.

Bibliography: G. Gardn. in Hook., Lond. Journ. Bot. 1: 442—443, pl. 13. 1842; Walp., Ann. Bot. Syst. 1: 890—891. 1849; Steud., Syn. Pl. Glum. 2: [Cyp.] 274 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 284, 300, 307, 440, 442, 443, & 507. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1023. 1883; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 877 (1893) and imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 445. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 246, 260, 284, 289, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 415. 1928; Stapf, Ind. Lond. 3: 90. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 445. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 877 (1946) and imp. 2, 2: 401.

1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 28, 32, 45, 49, & 56. 1946; Moldenke, Alph. List Cit. 2: 412 (1948) and 3: 935. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 297. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 105, 279, 285, 323, 325, 351, 352, & 491. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 877 (1960) and imp. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 12: 11. 1965; Moldenke, Phytologia 20: 98. 1970; Moldenke, Fifth Summ. 1: 172 & 478 (1971) and 2: 493, 577, & 960. 1971; Moldenke, Phytologia 30: 109 & 110 (1975), 34: 275 (1976), and 35: 36. 1976.

Illustrations: G. Gardn. in Hook., Lond. Journ. Bot. 1: pl. 13. 1842.

This species is based on G. Gardner 5261 from "In campis excelsis arenosis in Districtu Adamantum", Minas Gerais, Brazil, deposited in the herbarium of the Royal Botanic Gardens at Kew. The Eriocaulon arenarium Mart., cited above, is a synonym of Paepalanthus parvus Ruhl., while E. arenarium Salzm. belongs to the synonymy of Paepalanthus subtilis Miq.

Gardner's comments (1842) are worth noting here: "This species belongs to Kunth's first section of his genus Paepalanthus 'Capitula villosa', and is nearly allied to P. Bahiensis, ciliatus, and brachypus. I have only access at present to three specimens, and in all of these I find the flowers to be stamiferous, from which I am induced to believe that the plant is dioecious. Fig. 4, the artist considered to be the female flower, but it is certainly nothing more than an older state of fig. 3. It is only in the stamiferous flower of its allies that the inner sepals are connate. The female flowers, therefore, still remain unknown; but most probably they do not differ much from those of P. Bahiensis."

Ruhland (1903) cites only G. Gardner 5261 and Sena s.n. [Herb. Schwacke 12273 & 14576] from Minas Gerais. Silveira (1928) cites A. Silveira 518, collected at Diamantina in 1908.

The species has been found growing on high sandy campos and in "solo arenoso do campo, junta aos afloramentos rochosos", flowering in June and August and fruiting in August.

Material of S. arenarius has been misidentified and distributed in some herbaria as Paepalanthus senaeanus Ruhl. On the other hand, the Archer 3678 and M. A. Chase 10357, distributed as S. arenarius, actually are Leiothrix curvifolia var. plantago (Mart.) Ruhl. One of the Schwacke collections in the Berlin herbarium contains one peduncle which does not appear to pertain to the rest of the material comprising the collection.

Additional citations: BRAZIL: Minas Gerais: G. Gardner 5261 (B—isotype, N—isotype, W—1067951—isotype); Hatschbach 30216 (Z); Sena s.n. [Herb. Schwacke 12273] (B), s.n. [Herb. Schwacke 14576] (B). MOUNTED ILLUSTRATIONS: drawings by Körnigke (B).

SYNGONANTHUS ARENARIUS var. HETEROPHYLLUS (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 260 [as "heterophylla"]. 1903.

Synonymy: Paepalanthus heterophyllus Körn. in Mart., Fl. Bras. 3 (1): 442. 1863. Dupatya heterophylla (Körn.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya heterophylla Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 445. 1902. Syngonanthus arenarius var. heterophylla (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 260. 1903. Syngonanthus heterophylla (Körn.) Ruhl. ex Moldenke, Phytologia 4: 297, in syn. 1953. Syngonanthus heterophyllus (Körn.) Ruhl. ex Moldenke, Phytologia 4: 297, in syn. 1953 [not S. heterophyllus Alv. Silv., 1928].

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 284, 300, 307, 440-443, 451, & 507. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1023. 1883; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 445. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 260, 290, & 293. 1903; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 445. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 49, & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 297. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 445. 1959; Moldenke, Résumé 105, 325, 351, 352, & 491. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 584, 635, 637, & 960. 1971.

This variety is based on an unnumbered Martius collection from "Minas Novas ad Chapada oppidulum", Minas Gerais, Brazil, collected in June, 1818, and deposited in the Munich herbarium where it was photographed by Macbride as his type photograph number 18741. Ruhland (1903) cites only this collection and Sena s.n. [Herb. Schwacke 44547] from the Serra da Cipó in the same Brazilian state. Silva describes it as a caespitose herb, 20 cm. tall, and found it to be "pouce frequente em afloramento de arenito" at 1350 meters altitude, flowering in April.

Additional citations: BRAZIL: Minas Gerais: Martius s.n. [Minas Novas ad Chapada oppidulum, Junio 1818; Macbride photos 18741] (Mu--type, W--photo of type); Sena s.n. [Herb. Schwacke 44547] (B, Z); J. B. Silva 590 [Herb. Set. Lag. 727] (Ba). MOUNTED ILLUSTRATIONS: drawings by Körnicke (B).

SYNGONANTHUS ARTHROTRICHUS Alv. Silv., Fl. Mont. 1: 364-365, pl. 230. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 364-365 & 415, pl. 230. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Résumé 105 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2:

960. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 230. 1928.

This species is based on A. Silveira 639 from "In campis arenosis prope Diamantina", Minas Gerais, Brazil, collected in September, 1916, and deposited in the Silveira herbarium. On page 415 of his work (1928) Silveira cites also A. Silveira 638 from Baraunas, Minas Gerais, and collected in the same year. In his text he refers to illustration "CCXXXI", but it is plate 230 which is labeled as actually representing S. arthrotrichus (plate 231 is said to illustrate S. erectifolius Alv. Silv.). He comments that S. arthrotrichus "A S. pauperi Ruhl. valde affine differt foliis et indumento pedunculorum". Thus far it is known only from the original collections.

SYNGONANTHUS ATROVIRENS (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 261. 1903.

Additional synonymy: Paepalanthus atrovirens Körn. in Mart., Fl. Bras. 3 (1): 445. 1863. Dupatya atrovirens (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya atrovirens Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus atrovirens Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 445 & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 246, 261, 289, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 340 & 415. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 28, 45, & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 298. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 106, 279, 323, 351, & 491. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 401. 1960; Moldenke, Fifth Summ. 1: 172 & 478 (1971) and 2: 577, 635, & 960. 1971.

This species is based on an unnumbered collection of Martius from "zwischen Cidade Diamantina und dem Flusse Iiquitinhonha oder Rio Belmonte, an felsigen überrieselten Stellen des Gebietes von Serro Frio", Minas Gerais, Brazil, flowering in June [the actual holotype in the Munich herbarium is inscribed "inter Tejuco et fluv. Tequetinnonha in Serra Frio"]. Silveira (1928) cites also A. Silveira 840 from Itacambira, Minas Gerais, collected in 1926, and adds the following to Ruhland's (1903) description: "Folia basalia linearis, acuta, caespiroea, utrinque pilis appressis obsita, erecta vel recurva, basi lanata, 5 cm longa, 2-3 mm medio lata". The type, in the Munich herbarium, was photographed there by Macbride as his type photograph number 18742.

Additional citations: BRAZIL: Minas Gerais: Martius s.n. [inter Tejuco et fluv. Tequetinnonha in Serro Frio; Macbride photos 18742] (Mu--type, W--photo of type).

SYNGONANTHUS AURIFIBRATUS Alv. Silv., Fl. Mont. 1: 360—362, pl. 228. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 360—362 & 415, pl. 228. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 56. 1946; Moldenke, Alph. List Cit. 3: 935. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 298. 1953; Moldenke, Résumé 106 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 960. 1971; Moldenke, Phytologia 31: 382 & 385. 1975.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 228. 1928.

This species is based on A. Silveira 582 from "In arenosis, locis siccis prope Lagoão, in Serra do Cabral", Minas Gerais, Brazil, collected in May, 1910, and deposited in the Silveira herbarium. On page 415 of his work (1928) Silveira cites a "n. 1.910" from Serra do Cabral, but this is probably a typographic error. In his text he refers to plate "CCXXIX" as representing this plant, but actually S. aurifibratus is illustrated on plate 238. He comments that the "Species propter caulem ramosum paulloque elongatum inter illas sectionis Eulepidis distinctissima".

The species has been collected in anthesis in May and August and closely resembles Paepalanthus saxicola var. conicus Moldenke. Material has been misidentified and distributed in some herbaria as Paepalanthus sp.

Additional citations: BRAZIL: Amazônas: Lützelburg 21962 (M, Z).

SYNGONANTHUS AURIPES Alv. Silv., Fl. Mont. 1: 343—344, pl. 217. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 343—344 & 415, pl. 217. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Résumé 106 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 960. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 217. 1928.

This species is based on Lützelburg 6036 from the Serra do Veado, Goiás, Brazil, collected in 1912, and deposited as no. 631 in the Silveira herbarium. On page 415 of his work (1928) Silveira cites also A. Silveira 515 from the same locality. He comments that the species "A. S. nitente (Bong.) Ruhl. bracteis interioribus flores superantibus praecipue differt". Hatschbach has encountered the species in wet candy campos, flowering and fruiting in May.

Citations: BRAZIL: Goiás: Hatschbach 36767 (Z).

SYNGONANTHUS BAHIENSIS Moldenke, Phytologia 25: 230, nom. nud. Feb. 6, 1973 and 27: 69—71. Oct. 12, 1973.

Bibliography: Moldenke, Phytologia 25: 230 (1973) and 27: 69—71, fig. 3. 1973; Moldenke, Biol. Abstr. 57: 3780. 1974.

Illustrations: Moldenke, Phytologia 27: 70, fig. 3. 1973.

Citations: BRAZIL: Bahia: Irwin, Harley, & Smith 30703 (N—isotype, Z—type).

SYNGONANTHUS BALDWINI Moldenke, Phytologia 3: 174. 1949.

Synonymy: Syngonanthus baldwini Moldenke, Résumé Suppl. 12: 12, in syn. 1965.

Bibliography: Moldenke, Phytologia 3: 174 (1949) and 4: 298. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 244. 1953; Moldenke, Résumé 106 & 491. 1959; Moldenke, Résumé Suppl. 12: 12. 1965; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 635 & 960. 1971.

Campbell and his associates found this plant growing "in cracks of exposed rock in debris" and describe the plant as an herb to 6 cm. tall, with white inflorescences. They found it in flower and fruit in June.

Additional citations: BRAZIL: Amazônas: J. T. Baldwin 3479 (W—1878912—isotype); Maguire, Steyermark, & Maguire 60118 (N). Pará: Campbell, Ongley, Ramos, Monteiro, & Nelson P.22435 (Z).

SYNGONANTHUS BARBATUS Alv. Silv., Fl. Mont. 1: 382—383, pl. 243. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 382—383 & 445, pl. 243. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Résumé 106 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 960. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 243. 1928.

This species is based on A. Silveira 647 from "In campis arenosis in serra do Cabral", Minas Gerais, Brazil, collected in November, 1916, and deposited in the Silveira herbarium. Silveira (1928) in his text refers to plate "CCXLIV" as representing this species, but it is plate 243 which is labeled S. barbatus; plate 244 is labeled S. ensifolius Alv. Silv. He comments that S. barbatus is a "Species ob pulvinum pilosum basis foliorum certe distinctissima", but I feel that it comes uncomfortably close to the typical S. elegans (Bong.) Ruhl. Thus far it is known only from the original collection.

SYNGONANTHUS BARTLETTII Moldenke, Phytologia 1: 335—336. 1939.

Bibliography: Moldenke, Phytologia 1: 335—336. 1939; Moldenke, Carnegie Inst. Wash. Publ. 522: 145—146. 1940; Moldenke, Alph. List Cit. 1: 32. 1946; Moldenke, Known Geogr. Distrib. Erioc. 4 & 56. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 224. 1947; Molden-

ke, *Alph. List Cit.* 4: 1081. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 37 & 212. 1949; Moldenke, *Phytologia* 4: 294. 1953; Standl. & Steyerl., *Fieldiana Bot.* 24: 378—379. 1958; Moldenke, *Résumé* 43 & 491. 1959; Moldenke, *Fifth Summ.* 1: 82 (1971) and 2: 960. 1971; Moldenke, *Phytologia* 35: 306. 1977.

McKee describes this plant as having light-green leaves and white inflorescences and found it to be "less common than no. 11378 [*Paepalanthus lamarckii* Kunth] in very sandy soil with impeded drainage", at 10 m. altitude, flowering in February. Carrick encountered it "in orchard savanna without lime-loving species, vegetational type 19". The Bartlett specimen cited below was previously cited from the University of Michigan herbarium, from which it is a transfer.

Additional & emended citations: BELIZE: H. H. Bartlett 11670 (Ld—isotype); Carrick 1354 (K1—7354); Gentle 9631a (Ld, S); McKee 11379 (P, W—2644487).

SYNGONANTHUS BELLUS Moldenke, *Phytologia* 3: 174—175. 1949.

Bibliography: Moldenke, *Phytologia* 3: 174—175 (1949) and 4: 298. 1953; E. J. Salisb., *Ind. Kew. Suppl.* 11: 244. 1953; Moldenke, *Résumé* 106 & 491. 1959; Moldenke, *Résumé Suppl.* 12: 4. 1965; Moldenke, *Fifth Summ.* 1: 172 (1971) and 2: 960. 1971; Moldenke, *Phytologia* 30: 318. 1975.

Both the Maguire & Murça Pires 40843 and the N. T. Silva 138 collections, cited below, are topotypes of the species. Recent collectors have encountered the species as "frequent" on wet sandy savannas, flowering in August. Material has been misidentified and distributed in some herbaria as *Paepalanthus* sp. France, Pennington, & Murça Pires 1283 & 1284 are mixtures with *S. gracilis* var. *hirtellus* (Steud.) Ruhl. and *Paepalanthus polytrichoides* Kunth -- apparently the three taxa grow in close association.

Additional citations: BRAZIL: Amapá: Murça Pires & Cavalcante 52383 (N). Maranhão: Fróes 34572 (Bm). Pará: Maguire & Murça Pires 40843 (N); Murça Pires 6049 (Z); France, Pennington, & Murça Pires 1283, in part (N, S), 1284, in part (N); N. T. Silva 138 (N).

SYNGONANTHUS BICOLOR Alv. Silv., *Fl. Mont.* 1: 337—338, pl. 213. 1928.

Bibliography: Alv. Silv., *Fl. Mont.* 1: 337—338 & 415, pl. 213. 1928; Wangerin in *Just, Bot. Jahresber.* 57 (1): 477. 1937; Fedde in *Just, Bot. Jahresber.* 57 (2): 895. 1938; A. W. Hill, *Ind. Kew. Suppl.* 9: 271. 1938; Worsdell, *Ind. Lond. Suppl.* 2: 426. 1941; Moldenke, *Known Geogr. Distrib. Ericoc.* 17 & 56. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 90 & 212. 1949; Moldenke, *Résumé* 106 & 491. 1959; Moldenke, *Fifth Summ.* 1: 172 (1971) and 2: 960. 1971.

Illustrations: Alv. Silv., *Fl. Mont.* 1: pl. 213. 1928.

This species is based on A. Silveira 661 from "In campis in

Riacho das Pedras, prope Diamantina", Minas Gerais, Brazil, collected in April, 1908, and deposited in the Silveira herbarium. Silveira (1928) comments that the species is "A S. anthemidiflora (Bong.) Ruhl. pedunculo 5-costato et forma indumentoque sepalorum floris masculi facile distinguitur". Mello Barreto refers to the plant as frequent "in brejo in pantanosis", flowering in October. Material has been misidentified and distributed in some herbaria as the very similar S. canaliculatus Alv. Silv. and S. laricifolius (G. Gardn.) Ruhl.

Citations: BRAZIL: Minas Gerais: Mello Barreto 9494 [Herb. Jard. Bot. Belo Horiz. 24811, in part] (N).

SYNGONANTHUS BIFORMIS (N. E. Br.) Gleason, Bull. Torrey Bot. Club 56: 394. 1929.

Synonymy: Paepalanthus biformis N. E. Br., Trans. Linn. Soc. Lond., ser. 2, Bot. 6: 71—72. 1929. Syngonanthus biformis Gleason apud A. W. Hill, Ind. Kew. Suppl. 8: 231. 1933.

Bibliography: N. E. Br., Trans. Linn. Soc. Lond., ser. 2, Bot. 6: 71—72. 1901; Ruhl. in Engl., Pflanzenreich 13 (4-30): 248 & 289. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Gleason, Bull. Torrey Bot. Club 56: 394. 1929; A. W. Hill, Ind. Kew. Suppl. 8: 231. 1933; Fedde & Schust. in Just, Bot. Jahresber. 57 (2): 16. 1937; Uttien & Heyn in Pulle, Fl. Surin. 1 [Meded. Konink. Ver. Ind. Inst. 30, Afd. Handelms. 11]: 221. 1938; Moldenke in Gleason & Killip, Brittonia 3: 159. 1939; Moldenke, Alph. List Cit. 1: 132. 1946; Moldenke, Known Geogr. Distrib. Erioc. 5—7, 45, & 56. 1946; Moldenke, Phytologia 2: 352. 1947; Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 200. 1948; Moldenke, Alph. List Cit. 3: 701, 975, & 976 (1949) and 4: 985 & 1074. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 61, 65, 66, 68, & 212. 1949; Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 200. 1948; Moldenke, Mem. N. Y. Bot. Gard. 8: 99. 1953; Moldenke, Phytologia 4: 298. 1953; Moldenke in Steyerl., Fieldiana Bot. 28: 824 & 826. 1957; Moldenke, Résumé 68, 73, 76, 77, 106, 323, & 491. 1959; Moldenke, Résumé Suppl. 1: 6 (1959) and 12: 4. 1965; J. A. Steyerl., Act. Bot. Venez. 1: 246. 1966; Lindeman & Görts-van Rijn in Pulle & Lanjouw, Fl. Surin. 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11]: 335 & 337. 1968; Van Donselaar, Meded. Bot. Mus. Rijksuniv. 306: 402. 1968; Moldenke, Phytologia 18: 105. 1969; Oberwinkler, Pterid. & Sperm. Venez. 8 & 52. 1970; Moldenke, Fifth Summ. 1: 120, 127, 131, 132, & 172 (1971) and 2: 578 & 960. 1971; Moldenke, Phytologia 25: 244 (1973), 31: 386 (1975), and 35: 307 & 317. 1977.

This species is based on McConnell & Quelch 126 from the Kotinga Valley, near Mount Roraima, Guyana, deposited in the herbarium of the Royal Botanic Gardens at Kew. Brown (1901) says of it "This species much resembles Paepalanthus simplex, Moq., but is readily distinguished by the very unequal size and dissimilar form of the male and female flowers, the females conspicuously projecting much beyond the males, so that the heads have a somewhat ech-

inate appearance." He cites only the type collection. Ruhland (1903) reduced it to the synonymy of S. simplex (Miq.) Ruhl., "from which", according to Gleason (1929), "it is abundantly distinct". In his unpublished Flora of British Guiana he separates the two species as follows:

Pistillate and staminate flowers, including the pedicels, about equal in length.....S. simplex.
Pistillate flowers about twice as long as the staminate S. biformis

He describes S. biformis as "Leaves densely cespitose, narrowly linear, about 1 cm. long, puberulent; peduncles few, erect, 3-6 cm. high, obscurely 3-costate, lightly twisted, sparsely glandular-hirtellous; sheaths exceeding the leaves, 10-15 mm. long, straight, scarcely striate; heads hemispheric, about 5 mm. wide, silvery white, the projecting pistillate sepals very conspicuous." He cites from the Roraima district Loyed 20, Quelch & McConnell 126, and G. H. H. Tate 21 and "without definite locality, C. B. Clarke". He regarded it as endemic to Guyana. Lindeman & Görts-van Rijn (1968) use the same floral characters to separate the two taxa, but add for S. simplex "Involucral bracts about the same length as the flowers", and for S. biformis "Involucral bracts much shorter than the flowers". They cite Maguire 24728 and J. P. Schulz 10351 from Surinam, along with McConnell & Quelch 126 from Guyana. Gleason, in his 1929 work, cites Tate 21 as from "At edge of water, Frechal, extreme northern Brazil" (rather than Guyana). Uittien & Heyn (1938) reduce it to synonymy under the very polymorphic S. gracilis (Bong.) Ruhl.

Gleason, in notes attached to the Britton Herbarium specimen of C. B. Clarke s.n., cited below, asserts: "pistillate sepals 2.5 mm. long, lanceolate, acuminate, glabrous, slightly conduplicate or keeled; pistillate petals 1.1 mm. long, narrowly cuneate-obovate, densely hirsute; staminate lateral sepals 1.4 mm. long, spatulate-obovate, strongly falcate and inequilateral, strongly pubescent on one side only at the middle, posterior sepals 1.4 mm. long, equilateral, narrowly rhombic-spatulate; staminate petals connate into an obconic cup 1 mm. long, the lobes (if any) strongly involute or hidden; stamens included."

The Ducke collection cited below is placed here tentatively: it does not have the appearance of S. biformis in all respects, e.g., the leaves are very long and there is a dense mat of hairs in the center of the rosette.

Recent collectors describe S. biformis as an herb with white or dull-white heads, white flowers, and dull-green leaves. They have encountered it in moist areas on savannas, in brejo (sedge meadows), on sandy flats bordering woods, at the edge of water, along streams in rainforests, on campos and sandy campos, in seepage among rocks by streams, in white sand, and in boggy or marshy places, at altitudes of 100-1400 meters, flowering in February, April, May, August, September, November, and December, and fruiting in February,

September, November, and December. Steyermark and his associates report it "forming grass-green mats, solitary, or in clumps", and Maguire and his associates refer to it as "locally frequent" or "common on moist sandy banks among rocks".

Material has been misidentified and distributed in some herbaria as S. gracilis (Bong.) Ruhl. On the other hand, the Hertel & Oberwinkler 15202, distributed as S. biformis, is actually S. anomalus (Körn.) Ruhl., while Vareschi & Maegdefrau 6550 is Eriocaulon guyanense Körn.

Additional citations: VENEZUELA: Amazonas: Herb. Exp. Ventuari s.n. (Ve—44017); Maguire, Wurdack, & Keith 44474 (N). Bolívar: Agostini 273 (Ve), 365 (Ve); Koyama & Agostini 7514 (N, N, N); Maguire, Steyermark, & Maguire 53544 (N); Steyermark, Dunsterville, & Dunsterville 104212 (Ac, S), 104528 (Ft, Mu); Vareschi & Foldats 4542 (N). GUYANA: C. B. Clarke s.n. [British Guiana, 1897] (N); Maguire, Maguire, & Wilson-Browne 46012 (N), 46179a (N); G. H. H. Tate s.n. [Mt. Roraima, Nov. 1927] (N). BRAZIL: Amazonas: G. H. H. Tate 21 (N). Goiás: Hatschbach 34587 (Ld). Minas Gerais: Williams & Assis 6885 (W—1832832). Pará: Ducke s.n. [Herb. Mus. Goeldi 12037] (Bs); W. A. Eglar 372 (Z), 1118 [Herb. Mus. Goeldi 23898] (Mm); Murça Pires 4080 (Be—74313). Paraíba: Moraes 2164 (Mn). Rondônia: France, Rodrigues, Ramos, & Farias 8914 (Ac, N, S).

SYNGONANTHUS BISULCATUS (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 273. 1903.

Synonymy: Paepalanthus bisulcatus Körn. in Mart., Fl. Bras. 3 (1): 436—437. 1863. Dupatya bisulcata (Körn.) Kuntze, Rev. Gen. Fl. 2: 745. 1891. Dupatya bisulcata Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 445. 1902. Syngonanthus bisulcatus Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 435—437 & 507. 1863; Kuntze, Rev. Gen. Fl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 445. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 271, 273, 289, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 415—416. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 445. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 28, 45, & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 298—299. 1953; Mendes Magalhães, Anais V Reun. Anual. Soc. Bot. Bras. 236—237. 1956; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 445. 1959; Moldenke, Résumé 106, 279, 323, 351, & 491. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 401. 1960; Renné, Levant. Herb. Inst. Agron. Minas 71. 1960; Moldenke, Fifth Summ. 1: 172 & 478 (1971) and 2: 578 & 960. 1971.

This species is based on an unnumbered Riedel collection from

central Brazil, probably deposited in the Leningrad herbarium. Ruhland (1903) cites Glaziou 20010 & "200001ha" and Riedel s.n. from Minas Gerais, commenting that the "Species foliorum structura valde insignis". Recent collectors refer to it as a caespitose herb, the inflorescences 12—35 cm. tall, and the heads white. They have found it growing in campos and dry campos, in wet sand on very rocky sandstone hilltops with occasional wet spots, in wet ground in cerrado in narrow valleys, and in wet campos in areas of campo and gallery forest margins, at altitudes of 1080—1300 meters, flowering from October to April and fruiting in January and February. Silveira (1928) cites A. Silveira 452 from Serra do Cabral, Minas Gerais, collected in 1900.

See this series of notes under S. elegans (Bong.) Ruhl. for a key to separate this species from 12 related species. Macbride photographed Glaziou 20010 in the Copenhagen herbarium as his type photograph number 22279, but this collection is not a type of any sort.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35119 (Ub); Glaziou 20010 [Macbride photos 22279] (B); Hatschbach, Smith, & Ayensu 28989 (Ld); Irwin, Maxwell, & Wasshausen 20536 (N, Z); Irwin, Reis dos Santos, Souza, & Fonsêca 22663 (Ld, N); Murça Pires & Black 2819 (N, Z); Occhioni 5600 [Herb. Fac. Nac. Farmac. 14623] (Ld); L. B. Smith 6846 (N, Z).

SYNGONANTHUS BISULCATUS var. ANGUSTIFOLIUS Alv. Silv., Fl. Mont. 1: 362 [as "angustifolia"]. 1928.

Synonymy: Syngonanthus bisulcatus var. angustifolia Alv. Silv., Fl. Mont. 1: 362. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 362 & 416. 1928; Moldenke, Known Geogr. Distrib. Ericoc. 17 & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Résumé 106, 351, & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 635 & 960. 1971.

This variety "A forma typica foliis angustioribus (0,5 mm latis) et subtus pilis brevibus erecto-patentibusque pubescentibus differt". It is based on A. Silveira 224 from "In campis arenosis prope Biribiri, in vicinia urbis Diamantina", Minas Gerais, Brazil, collected in April of 1919, and deposited in the Silveira herbarium. Silveira, on page 416 of his work (1928), gives "1903" as the date of collection of the type — whether he intends this as a correction or if it represents a typographic error is not clear. The variety is thus far known only from the original collection.

SYNGONANTHUS BISUMBELLATUS (Steud.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 263. 1903.

Synonymy: Eriocaulon bisumbellatum Steud., Syn. Fl. Glum. 2: [Cyp.] 275. 1855. Paepalanthus steudelianus Körn. in Mart., Fl. Bras. 3 (1): 450, pl. 58, fig. 2. 1863. Dupatya bisumbellata (Steud.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Eriocaulon bisumb.

Staud. apud Kuntze, Rev. Gen. Pl. 2: 746, in syn. 1891. Dupatya bisumbellata Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus bisumbellatus Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. Syngonanthus bisumbellatus f. elata Herzog ex Lützelb., Estud. Bot. Nordést. 3: 149 & 151. 1923. Syngonanthus bisumbellatus f. elatus Herzog ex Moldenke, Phytologia 4: 299. 1953. Syngonanthus biumbellatus f. elata Herzog ex Moldenke, Phytologia 4: 299, in syn. 1953. Syngonanthus biumbellatus (Staud.) Ruhl. ex Moldenke, Phytologia 31: 408, in syn. 1975.

Bibliography: Staud., Syn. Fl. Glum. 2: [Cyp.] 275 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 450, 500, & 507, pl. 58, fig. 2. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1023. 1883; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 877 (1893) and imp. 2, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 246, 263, 284, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Lützelb., Estud. Bot. Nordést. 3: 149 & 151. 1923; Stapf, Ind. Lond. 4: 519. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 877 (1946) and imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 28, 32, 54, & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 299. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 69, 106, 279, 286, 328, & 491. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 877 (1960) and imp. 3, 2: 402. 1960; Moldenke, Résumé Suppl. 2: 4 & 5. 1960; Moldenke, Fifth Summ. 1: 120, 127, 172, & 478 (1971) and 2: 494, 591, & 960. 1971; Moldenke, Phytologia 31: 386, 407, & 408. 1975.

Illustrations: Körn. in Mart., Fl. Bras. 3 (1): pl. 58, fig. 2. 1863.

This species is based on G. Gardner 2961 from Piauí, Brazil, this collection being the type both of Eriocaulon bisumbellatum and of Paepalanthus stuedeliamus. Ruhland (1903) cites only this original collection. Jackson (1893) accepts Paepalanthus stuedeliamus as the proper name for the species. Herzog's f. elatus seems to be based on Lützelburg 1441, 1441a, & 1441b from Rio Preto [Freto?], Goiás, Brazil, collected in August of 1912 and deposited in the herbarium of the Botanische Staatssammlung in Munich. I fail to discern any constant characters by means of which the form can be separated from the typical form of the species.

Recent collectors describe the flowers of S. bisumbellatus as white and have encountered the species on savannas, at altitudes of 700—800 feet, flowering in July and November. Material has been misidentified and distributed in some herbaria under the names S. froesii Moldenke and S. humboldtii (Kunth) Ruhl.

Additional citations: COLOMBIA: Vaupés: Schultes, Baker, & Cabrera 18449 (Z). VENEZUELA: Bolívar: Quezada s.n. [26-12-1959]

(Bm); Vareschi & Maegdefrau 6612 (Ve—42559). BRAZIL: Goiás: Lützelburg 1441 [N. Y. Bot. Gard. Type Photo Coll. Neg. N. S. 8846] (Mu, N—photo, Z—photo), 1441a (Mu), 1441b (Mu). Pará: Egler & Raimundo s.n. [W. A. Egler 963; Herb. Mus. Goeldi 23626] (Bd, Mm). Piauí: G. Gardner 2961 (B—isotype, B—isotype, N—isotype, W—936278—isotype, W—1066757—isotype). Roraima: Murça Pires & Leite s.n. [Herb. IPEAN 14801] (Ld). MOUNTED ILLUSTRATIONS: Körn. in Mart, Fl. Bras. 3 (1): pl. 58, fig. 2. 1863 (N, Z).

SYNGONANTHUS BISUMBELLATUS var. FROESII (Moldenke) Moldenke, *Phytologia* 29: 77. 1974.

Synonymy: Syngonanthus froesii Moldenke, *Résumé* 107 & 491, nom. nud. (1959), *Phytologia* 14: 399—400. 1967.

Bibliography: Moldenke, *Résumé* 107 & 491. 1959; Moldenke, *Résumé Suppl.* 11: 4 & 5. 1964; Hocking, *Excerpt. Bot. A.* 12: 425. 1967; Moldenke, *Phytologia* 14: 399—400. 1967; Moldenke, *Biol. Abstr.* 49: 2290. 1968; Moldenke, *Fifth Summ.* 1: 120 & 173 (1971) and 2: 962. 1971; Heslop-Harrison, *Ind. Kew. Suppl.* 15: 133. 1974; Moldenke, *Phytologia* 29: 77 (1974) and 31: 382, 386, & 408. 1975.

This variety differs from the typical form of the species in its shorter stems and closely overlapping very hispid leaves.

The Schultes, Baker, & Cabrera 18449, distributed as this variety, seems better regarded as representing the typical form of the species.

Citations: BRAZIL: Pará: Fröes 29904 (Hk—isotype, N—isotype, W—2344445—isotype, Z—type).

SYNGONANTHUS BLACKII Moldenke, *Phytologia* 3: 43—44. 1948.

Bibliography: Moldenke, *Phytologia* 3: 43—44. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 91 & 212. 1949; Moldenke, *Phytologia* 4: 299. 1953; E. J. Salisb., *Ind. Kew. Suppl.* 11: 244. 1953; Moldenke, *Résumé* 106 & 491. 1959; Moldenke, *Fifth Summ.* 1: 172 (1971) and 2: 960. 1971.

SYNGONANTHUS BRACTEOSUS Moldenke, *Phytologia* 25: 119—120. 1973.

Bibliography: Anon., *Biol. Abstr.* 56 (3): B.A.S.I.C. S.258. 1973; Moldenke, *Biol. Abstr.* 56: 1243. 1973; Moldenke, *Phytologia* 25: 119—120 & 230. 1973.

Citations: BRAZIL: Minas Gerais: Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 27118 (Ld—isotype, N—isotype, Z—type).

SYNGONANTHUS BREVIFOLIUS Gleason, *Bull. Torrey Bot. Club* 56: 14—15. 1929.

Bibliography: Gleason, *Bull. Torrey Bot. Club* 56: 14—15. 1929; A. W. Hill, *Ind. Kew. Suppl.* 8: 231. 1933; Fedde & Schust. in *Just. Bot. Jahresber.* 57 (2): 16. 1937; Moldenke, *Known Geogr. Distrib. Erioc.* 6 & 56. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 67 & 212. 1949; Moldenke, *Résumé* 76 & 491. 1959; Moldenke, *Fifth Summ.* 1: 131 (1971) and 2: 960. 1971; Moldenke, *Phytologia* 35: 307 & 316. 1977.

This species is based on Jerman 4755, collected at Bartica, Guyana, in November, 1888, and deposited in the herbarium of the Royal Botanic Gardens at Kew. Gleason (1929) says that it is "related to S. anomalus Ruhl., but differs in its much shorter leaves, with firm texture and prominent nerves, and its shorter, glabrous, truncate peduncular sheaths with obtuse lamina". In his unpublished Flora of British Guiana he describes it as having "Stems tufted, freely branched, somewhat woolly, 3--5 cm. long; leaves crowded toward the summit of the stem, recurved or spreading, narrowly lanceolate, 4--6 mm. long, 1.0 mm. wide; peduncles 10--16 mm. long, in the upper axils, sparsely hirtellous or glandular; sheaths 3--4 mm. long, glabrous, truncate, the lamina obtuse; heads 2--3 mm. wide, the bracts about 5, oblong-elliptic, rounded at the summit." In his key he distinguishes the two taxa as follows:

"Principal leaves about 15 mm. long, very thin and lax; peduncular sheaths acuminate.....S. anomalus.

Principal leaves about 5 mm. long, firm, prominently nerved; peduncular sheaths obtuse.....S. brevifolius."

The species is known thus far only from the original collection.

Material has been misidentified and distributed in some herbaria under the name S. esmeraldae Ruhl.

Citations: GUYANA: Jerman 4766 (N--isotype).

SYNGONANTHUS CABRALENSIS Alv. Silv., Fl. Mont. 1: 340--342, pl. 215. 1928.

Synonymy: Syngonanthus carralensis Alv. Silv. apud Wangerin in Just, Bot. Jahresber. 57 (1): 477, sphalm. 1937.

Bibliography: Alv. Silv., Fl. Mont. 1: 340--342 & 416, pl. 215. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 212. 1949; Moldenke, Résumé 106 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 960. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 215. 1928.

This species is based on A. Silveira 573 from "In arenosis secus margines rivulorum in Serra do Cabral", Minas Gerais, Brazil, collected in May, 1910, and deposited in the Silveira herbarium. It is known thus far only from the original collection and Silveira (1928) says of it: "Propter folia arcte rosulata brevique et pedunculos gracillimos, 3-costatos longissimosque ab affinis diversa".

SYNGONANTHUS CACHIMBOENSIS Moldenke, Résumé 106 & 491 [as "cachimboënsis"], nom. nud. 1959; Bol. Mus. Par. Emilio Goeldi, ser. 2, Bot. 3: 2--3. 1960.

Synonymy: Syngonanthus cachimboënsis Moldenke, Résumé 101 & 491. 1959.

Bibliography: Moldenke, *Résumé* 106 & 491. 1959; Moldenke, *Bol. Mus. Par. Emilio Goeldi*, ser. 2, Bot. 3: 2—3. 1960; Hocking, *Excerpt. Bot. A.4*: 284. 1962; Moldenke, *Biol. Abstr.* 37: 2453. 1962; Dau, *Excerpt. Bot. A.7*: 520. 1964; G. Taylor, *Ind. Kew. Suppl.* 13: 132. 1966; Moldenke, *Fifth Summ.* 1: 172 (1971) and 2: 960. 1971.

This species is based on Murça Pires, Black, Wurdack, & Silva 6168 from among wet rocks in rapids and waterfalls on the Serra do Cachimbo, at 425 meters altitude, Pará, Brazil, collected on December 12, 1956, and deposited in the Britton Herbarium at the New York Botanical Garden. It is known thus far only from the original collection and bears much similarity in aspect to S. huberi Ruhl., but its inflorescence-heads remind one strongly of the cyperaceous genus Eleocharis.

Citations: BRAZIL: Pará: Murça Pires, Black, Wurdack, & Silva 6168 (N—type).

SYNGONANTHUS CAESPITOSUS (Wikstr.) Ruhl. in *Engl., Pflanzenreich* 13 (4-30): 278—279. 1903.

Synonymy: Eriocaulon caespitosum Wikstr., *Kongl. Svensk. Vet. Akad. Handl. Stockh.*, ser. 2, 1: 78, pl. 4. 1820 [not E. caespitosum Cabanis, 1959, nor Poeppl., 1863]. Eriocaulon caespitosum Wikstr. apud Roem. & Schult., *Mant.* 2: 469. 1824. Paepalanthus caespitosus (Wikstr.) Körn. in *Mart., Fl. Bras.* 3 (1): 431. 1863. Paepalanthus caespitosus Körn. in *Mart., Fl. Bras.* 3 (1): 430, 431, & 506. 1863. Dupatya caespitosa (Wikstr.) Kuntze, *Rev. Gen. Pl.* 2: 745. 1891. Dupatya caespitosa Kuntze apud Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 1, 145. 1902. Syngonanthus caespitosus Ruhl. apud Prain, *Ind. Kew. Suppl.* 3: 175. 1908. Leiothrix curvifolia var. fimbriata Herzog ex Moldenke, *Phytologia* 34: 275, in syn. 1976.

Bibliography: Wikstr., *Kongl. Svensk. Vet. Akad. Handl. Stockh.*, ser. 2, 1: 78, pl. 4. 1820; Wikstr., *Trenne Nya Art. Örtsl. Erioc.* 11—12 & [15], pl. 4. 1821; Roem. & Schult., *Mant.* 2: 264 & 469. 1824; Spreng. in L., *Syst. Veg.*, ed. 16, 3: 776. 1826; Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: 628. 1831; Bong., *Ess. Monog. Erioc.* 5 & 28. 1831; Steud., *Nom. Bot.*, ed. 2, 1: 585. 1840; Kunth, *Enum. Fl.* 3: 506, 575, & 612. 1841; D. Dietr., *Syn. Fl.* 5: 267. 1852; Steud., *Syn. Fl. Glum.* 2: [Cyp.] 269 & 333. 1855; Körn. in *Mart., Fl. Bras.* 3 (1): 430—432 & 506. 1863; Kuntze, *Rev. Gen. Pl.* 2: 745. 1891; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 1: 877 (1893) and imp. 1, 2: 401. 1894; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 1, 145. 1902; Ruhl. in *Engl., Pflanzenreich* 13 (4-30): 276, 278, 285, 289, & 292. 1903; Prain, *Ind. Kew. Suppl.* 3: 175. 1908; Stapf, *Ind. Lond.* 3: 90. 1930; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 2, 145. 1951; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 2, 1: 877 (1946) and imp. 2, 2: 401. 1946; Moldenke, *Known Geogr. Distrib. Erioc.* 17, 29, 33, 45, & 57. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 91 & 212. 1949; Moldenke, *Phytologia* 4: 299 & 311. 1953; Durand & Jacks., *Ind. Kew. Suppl.*

1, imp. 3, 145. 1959; Moldenke, Résumé 106, 279, 286, 323, & 491. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 877 (1960) and imp. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 18: 10. 1969; Moldenke, Phytologia 20: 95 & 417. 1970; Moldenke, Fifth Summ. 1: 172 & 478 (1971) and 2: 496, 578, & 961. 1971; Moldenke, Phytologia 34: 259 & 275. 1976.

Illustrations: Wikstr., Kongl. Svensk. Vet. Akad. Handl. Stockh., ser. 2, 1: pl. 4. 1820; Wikstr., Trenne Nya Art. Örtsl. Erioc. pl. 4. 1821.

This species is based on an unnumbered Freyreiss collection from one of the "östliche Provinzen" of Brazil; Freyreiss 8, cited by me in my 1953 work, may actually be part of this type collection. Wikström (1820) says of the species: "Proxime affinis videtur E[riocaulon] microcephalo et E. tenui..... Ab E. microcephalo differt foliis lineari-lanceolatis rigidissimis margine albo-ciliatis; scapis foliis multoties longioribus et unacum vaginis pubescentibus; dum E. microcephali folia ensiformia membranacea pilosa; scapi (s. pedunculi) foliis tantum paullo longiores; vagina glabra et s. p. — Ab E. tenui differt foliis lineari-lanceolatis recurvatis margine albo-ciliatis duplo fere longioribus; scapis multoties longioribus; vaginis pubescentibus; dum E. tenuis folia lineari-subulata, basi tantum piloso-lanata; scapi (s. pedunculi) setacei, 4—7 pollicares; vagina glabra et s. p." Kunth (1841) also says "Proxime affine E. microcephalo et tenui, sed characteribus datis satis distinctum".

It should be noted here that Eriocaulon caespitosum Poepp., referred to in the synonymy above, and E. caespitosum (Wikstr.?) Poepp. are synonyms of Paepalanthus bifidus (Schrad.) Kunth, while E. caespitosum Cabanis is Syngonanthus flavidulus (Michx.) Ruhl. Leiothrix curvifolia var. fimbriata is apparently based on F. C. Hoehne 5068 in the Munich herbarium.

Ruhland (1903) cites only Freyreiss s.n. and Langsdorff s.n. from the "östliche Provinzen" of Brazil in the Berlin herbarium. Bongard (1831) describes the species as "acaule; foliis caespitosis lineari-lanceolatis obtusiusculis ciliatis; pedunculis caespitosis pubescentibus; vaginis foliis sublongioribus, pubescentibus apice lacimulatis".

Additional citations: BRAZIL: Minas Gerais: F. C. Hoehne 5068 (Mu). State undetermined: Freyreiss s.n. [Brasília] (B--isotype). MOUNTED ILLUSTRATIONS: drawings by Körnicke (B).

SYNGONANTHUS CANALICULATUS Alv. Silv., Fl. Mont. 1: 327—328, pl. 208. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 327—328 & 416, pl. 208. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946; Moldenke, Alph. List Cit. 3: 935. 1949; Moldenke, Known Geogr. Distrib. Ver-

benac., [ed. 2], 91 & 212. 1949; Moldenke, *Phytologia* 4: 299. 1953; Mendes Magalhães, *Anais V Reun. Anual Soc. Bot. Bras.* 276—277. 1956; Moldenke, *Résumé* 106 & 491. 1959; Rennó, *Levant. Herb. Inst. Agron. Minas* 71. 1960; Moldenke, *Fifth Summ.* 1: 172 (1971) and 2: 961. 1971.

Illustrations: *Alv. Silv.*, *Fl. Mont.* 1: pl. 208. 1928.

This species is based on A. Silveira 575 from "In campis arenosis in Serra do Cabral", Minas Gerais, Brazil, collected in May, 1910, and deposited in the Silveira herbarium. Other collectors have found it growing at 1200 meters altitude, flowering and fruiting in September. Silveira (1928) says of it: "Ab affinis S. densifolio *Alv. Silv.* et S. flavicepte *Alv. Silv.* ad quos proxime accedit, bracteis involucrentibus subulatis superne arcato-patentibus, exterioribus non gradatim minoribus et pilositate foliorum praecipue differt".

The Mello Barreto 9494 [*Herb. Jard. Bot. Belo Horiz.* 24811, in part], previously cited by me as S. canaliculatus (as it also was originally distributed), seems, rather, to represent S. bicolor *Alv. Silv.*

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27378 (S, Z); A. Silveira 575 [*Herb. Marie-Victorin* 12431] (N—photo of isotype, Z—photo of isotype).

SYNGONANTHUS CANASTRENSIS *Alv. Silv.*, *Fl. Mont.* 1: 368—369, pl. 233. 1928.

Bibliography: *Alv. Silv.*, *Fl. Mont.* 1: 368—369 & 416, pl. 233. 1928; Wangerin in *Just, Bot. Jahresber.* 57 (1): 477. 1937; Fedde in *Just, Bot. Jahresber.* 57 (2): 895. 1938; A. W. Hill, *Ind. Kew. Suppl.* 9: 271. 1938; Worsdell, *Ind. Lond. Suppl.* 2: 426. 1941; Moldenke, *Known Geogr. Distrib. Erioc.* 17 & 57. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 91 & 212. 1949; Moldenke, *Résumé* 106 & 491. 1959; Moldenke, *Fifth Summ.* 1: 172 (1971) and 2: 961. 1971.

Illustrations: *Alv. Silv.*, *Fl. Mont.* 1: pl. 233. 1928.

This species is based on A. Silveira 743 from "In campis arenosis siccisque in Serra da Canastra", Minas Gerais, Brazil, collected in April, 1925, and deposited in the Silveira herbarium. In his text (1928) Silveira refers to his "Tabula CCXXXIV", but the illustration of S. canastrensis is on plate 233 — pl. 234 depicts S. heterophyllus *Alv. Silv.* Thus far, S. canastrensis is known only from the original collection, and Silveira says of it: "Species ob indumentum foliorum pedunculorumque facile distinguenda".

SYNGONANTHUS CANDIDUS *Alv. Silv.*, *Fl. Mont.* 1: 359—360, pl. 227. 1928.

Bibliography: *Alv. Silv.*, *Fl. Mont.* 1: 359—360 & 416, pl. 227. 1928; Wangerin in *Just, Bot. Jahresber.* 57 (1): 477. 1937; Fedde in *Just, Bot. Jahresber.* 57 (2): 895. 1938; A. W. Hill, *Ind. Kew. Suppl.* 9: 271. 1938; Worsdell, *Ind. Lond. Suppl.* 2: 426. 1941;

Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 212. 1949; Moldenke, Phytologia 4: 299. 1953; Moldenke, Résumé 106 & 491. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 961. 1971; Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.258. 1973; Moldenke, Biol. Abstr. 56: 1243. 1973; Moldenke, Phytologia 25: 120 & 230. 1973.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 227. 1928.

This species is based on A. Silveira 665 from "In campis arenosis ad Pico do Itambé", Minas Gerais, Brazil, collected in April, 1918, and deposited in the Silveira herbarium; on page 416 of his work (1928) Silveira gives the type locality as "Serra do Itambé". In his text he cites the illustration of S. candidus as "Tabula CCXXVIII", but it is actually on plate 227 — plate 228 depicts S. aurifibratus Alv. Silv.

Syngonanthus candidus bears striking resemblance to S. elegans (Bong.) Ruhl., S. elegantulus Ruhl., S. prolifer Alv. Silv., and S. niveus (Bong.) Ruhl.

SYNGONANTHUS CANDIDUS var. BAHIENSIS Moldenke, Phytologia 25: 120. 1973.

Bibliography: Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.258. 1973; Moldenke, Biol. Abstr. 56: 1243. 1973; Moldenke, Phytologia 25: 120 & 230. 1973.

Citations: BRAZIL: Bahia: Irwin, Harley, & Smith 32500 (N-isotype, Z—type).

SYNGONANTHUS CAPILLACEUS Alv. Silv., Fl. Mont. 1: 352—353, pl. 223, fig. 2. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 352—353 & 416, pl. 223, fig. 2. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 212. 1949; Moldenke, Phytologia 4: 299. 1953; Moldenke, Résumé 106 & 491. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 961. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 223, fig. 2. 1928.

This species is based on A. Silveira 652 from "In campis prope Barauna", Minas Gerais, Brazil, collected in April, 1918, and deposited in the Silveira herbarium. On page 416 of his work (1928) Gives "Baraunas" as the type locality.

SYNGONANTHUS CARACENSIS Alv. Silv., Fl. Mont. 1: 392—393, pl. 251. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 392—393 & 416, pl. 251. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; A. W. Hill, Ind. Kew. Suppl. 9: 271. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941;

Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946; Moldenke, Phytologia 2: 498. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 212. 1949; Moldenke, Résumé 106 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 961. 1971.

Illustrations: *Alv. Silv.*, Fl. Mont. 1: pl. 251. 1928.

This species is based on A. Silveira 430 from "In campis siccis arenosisque in Serra do Caraça", Minas Gerais, Brazil, collected in April of 1906, and deposited in the Silveira herbarium. In his text (1928) Silveira refers to "Tabula CCLII" as illustrative of this species, but it is actually depicted on plate 251 — plate 252 illustrates S. flexuosus *Alv. Silv.*

Thus far S. caracensis, in its typical form, is known only from the original collection.

SYNGONANTHUS CARACENSIS var. GLABRESCENS *Alv. Silv.*, Fl. Mont. 1: 393. 1928.

Synonymy: Syngonanthus caracensis var. glabrescens *Alv. Silv.*, Fl. Mont. 1: 416, sphalm. 1928.

Bibliography: *Alv. Silv.*, Fl. Mont. 1: 393 & 416. 1928; Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946; Moldenke, Phytologia 2: 498. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 212. 1949; Moldenke, Résumé 106, 351, & 491. 1959; Moldenke, Fifth Summ. 1: 172 & 635 (1971) and 2: 961. 1971.

This variety is based on Silveira 797 from "In campis prope Serra da Moeda", Minas Gerais, Brazil, collected in July, 1926, and deposited in the Silveira herbarium. Silveira (1928) describes it as "Differt a forma typica foliis nunc glabris nunc inferiore parte vix pubescentibus". Thus far it is known only from the original collection.

SYNGONANTHUS CAULESCENS (Poir.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 267. 1903.

Synonymy: Eriocaulon caulescens Poir. in Lam., Encycl. Méth. Bot. Suppl. 3: 162. 1813 [not E. caulescens Hook. f., 1903, nor Hook. f. & Thoms., 1864, nor Willd., 1841]. Eriocaulon splendens Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 633. 1831. Paepalanthus caulescens (Poir.) Kunth, Enum. Pl. 3: 537. 1841. Paepalanthus caulescens ♂ humilis Kunth, Enum. Pl. 3: 537. 1841. Paepalanthus caulescens ♀ parvifolius Kunth, Enum. Pl. 3: 537. 1841. Paepalanthus surinamensis Miq., Linnaea 19: 125. 1847. Paepalanthus caulescens Kunth apud Klotzsch in Schomb., Faun. & Fl. Brit. Guian. 1116. 1848. Eriocaulon geraense Steud., Syn. Pl. Glum. 2: [Cyp.] 276—277. 1855. Eriocaulon simillimum Steud., Syn. Pl. Glum. 2: [Cyp.] 277. 1855. Eriocaulon subuncinatum Steud., Syn. Pl. Glum. 2: [Cyp.] 277. 1855. Eriocaulon surinamense Miq. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 275. 1855. Eriocaulon e Cayenne Willd. ex Körn. in Mart., Fl. Bras. 3 (1): 466, in syn. 1863. Eriocaulon splendens (Bong.) Schnitz. ex Körn.

in Mart., Fl. Bras. 3 (1): 466, in syn. 1863. Eriocaulon splendens var. α Bong. ex Körn. in Mart., Fl. Bras. 3 (1): 466, in syn. 1863. Eriocaulon splendens var. ψ caule humilior Bong. ex Körn. in Mart., Fl. Bras. 3 (1): 466, in syn. 1863. Paepalanthus caulescens var. a Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus caulescens var. b Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus caulescens var. b subvar. α Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus caulescens var. b subvar. ψ Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus caulescens var. b subvar. ζ Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus caulescens var. b subvar. ξ Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus caulescens var. b subvar. η Körn. in Mart., Fl. Bras. 3 (1): 466—468. 1863. Paepalanthus splendens (Bong.) Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 466, in syn. 1863. Paepalanthus splendens Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 466, in syn. 1863. Carpoccephalus caulescens Kunth ex V. A. Pouls., Vidensk. Meddel. Naturh. Foren. Kjöbenh. 40 [ser. 4, 9]: 359. 1888. Dupatyia caulescens (Poir.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Eriocaulon geraense Steud. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 878, in syn. 1893. Eriocaulon surinamense Steud. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 879, in syn. 1893. Paepalanthus splendens Mart. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402, in syn. 1894. Dupatyia caulescens Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus caulescens Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. Eriocaulon surinamense (Miq.) Steud. ex Moldenke, Known Geogr. Distrib. Erioc. 41, in syn. 1946. Syngonanthus caulescens var. humilior Kunth ex Moldenke, Phytologia 4: 299, in syn. 1953. Syngonanthus caulescens (Poir.) Ruhl. ex Reitz, Sellowia 7: 124, sphalm. 1956. Eriocaulon caulescens Salzm. ex Moldenke, Résumé Suppl. 1: 16, in syn. 1959. Eriocaulon caulescens Kunth ex Moldenke, Résumé 286, in syn. 1959. Paepalanthus caulescens var. ψ subvar. ψ Kunth ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Paepalanthus caulescens var. ψ subvar. ζ Kunth ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Paepalanthus caulescens var. ψ subvar. ξ Kunth ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Syngonanthus callescens (Bong.) Ruhl. ex Moldenke, Résumé Suppl. 1: 23, in syn. 1959. Syngonanthus caulescens f. minor Ruhl. ex Moldenke, Résumé Suppl. 1: 23, in syn. 1959. Syngonanthus caulescens (Poir.) Ruhl. ex Soukup, Biota 2: 303. 1959. Syngonanthus callescens (Bong.) Ruhl. ex Moldenke, Phytologia 34: 277, in syn. 1976.

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- Steud., *Nom. Bot. Phan.*, ed. 1, 312. 1821; Roem. & Schult., *Mant.* 3: 671. 1827; Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: 633. 1830; Bong., *Ess. Monog. Erioc.* 4 & 33. 1831; Steud., *Nom. Bot.*, ed. 2, 1: 585 & 586. 1840; Kunth, *Enum. Pl.* 3: 537, 577, 612, 614, & 624. 1841; Schnitzl., *Iconogr.* 1: pl. 46, fig. 1. 1845; Miq., *Linnaea* 19: 126. 1847; Klotzsch in Schomb., *Faun. & Fl. Brit. Guian.* 1116. 1848; Walp., *Ann. Bot. Syst.* 1: 891. 1849; D. Dietr., *Syn. Pl.* 5: 263 & 268. 1852; Steud., *Syn. Pl. Glum.* 2: [Cyp.] 275—277, 280, 324, 333, & 334. 1855; Körn. in Mart., *Fl. Bras.* 3 (1): 420, 461, 466—468, 505, & 507. 1863; Körn. in Warm., *Vidensk. Meddel. Naturh. Foren. Kjöbenh.* 23: 315. 1871; V. A. Pouls., *Vidensk. Meddel. Naturh. Foren. Kjöbenh.* 40 [ser. 4, 9]: 359. 1888; Kuntze, *Rev. Gen. Pl.* 2: 745. 1891; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 1: 877—879 (1893) and imp. 1, 2: 401 & 402. 1894; Baillon, *Hist. Pl.* 12: [397]. 1894; Kuntze, *Rev. Gen. Pl.* 3 (2): 329. 1898; Holm, *Bot. Gaz.* 31: 20. 1901; Malme, *Bih. Svensk. Vet. Akad. Handl.* 27 (3), no. 11: 32. 1901; Ruhl. in Pilg., *Engl. Bot. Jahrb.* 30: 147. 1901; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 1, 145. 1902; Chod. & Hassl., *Bull. Herb. Boiss.*, ser. 2, 3: 1033 & 1034. 1903; Chod. & Hassl., *Fl. Hassler.* 2: 255 & 256. 1903; Ruhl. in Engl., *Pflanzenreich* 13 (4—30): 6, 7, 264, 267—269, 276, [283], 285, 287, 289, 292, & 293, fig. 38. 1903; Pilg. in Engl. & Prantl, *Nat. Pflanzenfam. Ergänzt.* 2, Nachtr. 3 zu 2: 40. 1908; Prain, *Ind. Kew. Suppl.* 3: 175. 1908; Molfino, *Physis* 6: 362. 1923; Alv. Silv., *Fl. Mont.* 1: 356 & 416. 1928; Ruhl. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 15a: 42, 43, 56, & 57, fig. 24. 1930; Stapf, *Ind. Lond.* 3: 91. 1930; Gleason, *Bull. Torrey Bot. Club* 58: 327. 1931; Herzog in Fedde, *Repert. Spec. Nov.* 29: 213. 1931; Stapf, *Ind. Lond.* 6: 248. 1931; Fedde in Just, *Bot. Jahresber.* 51 (2): 295. 1933; J. F. Macbr., *Field Mus. Publ. Bot.* 13: 490 & 491. 1936; Uittien & Heyn in Pulle, *Fl. Surin.* 1 [Meded. Konink. Ver. Ind. Inst. 30, Afd. Handelsmus. 11]: 220 & 222—223. 1938; Moldenke, *Phytologia* 1: 336. 1939; Moldenke, *Bull. Torrey Bot. Club* 68: 70. 1940; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 2, 145. 1941; Castell. in Descole, *Gen. & Sp. Pl. Argent.* 3: 71, 75, 92, 95—97, & 104, pl. 20 & 21. 1945; Abbiatti, *Rev. Mus. La Plata*, ser. 2, 6: [311], 312, 314, 316, 318, 319, 322, 332—335, 339, & 340, fig. 7 & 8, pl. 2 (3). 1946; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 2, 1: 877—879 (1946) and imp. 2, 2: 401 & 402. 1946; Moldenke, *Alph. List Cit.* 1: 132, 136, 195, 223, 238, & 266. 1946; Moldenke, *Known Geogr. Distrib. Erioc.* 4—7, 17, 19, 20, 29, 33, 35, 40, 41, 46, 52, 54, 55, & 57. 1946; Moldenke, *Lilloa* 12: 173 (1946) and 13: 10. 1947; Moldenke, *Phytologia* 2: 351, 352, 373—375, 377, 378, 380, & 381. 1947; Moldenke, *Lilloa* 14: 66. 1948; Moldenke, *Phytologia* 2: 498. 1948; Moldenke, *Alph. List Cit.* 2: 352, 389, 412, 457, 461, 599, 600, 616, 626, 627, & 633 (1948), 3: 655, 758, 815, 821, 855, 869, 870, 903, 935, 957, 967, 975, & 976 (1949), and 4: 1015, 1069, 1075, 1076, 1079, 1169, 1283, 1301, 1302, & 1304. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 40, 61, 65, 67, 68, 73, 91, 97, 99, 105, & 212. 1949; Rambo, *An. Bot. Herb. Barb. Rodr.* 1: 128. 1949; Moldenke,

Phytologia 4: 299--302 & 311. 1953; Moldenke in Maguire, Mem. N. Y. Bot. Gard. 8: 99. 1953; Rambo, Sellowia 6: 32, 60, 69, & 130. 1954; Goodspeed & Stork, Univ. Calif. Publ. Bot. 28: 128. 1955; Rambo, Sellowia 7: 248. 1956; Reitz, Sellowia 7: 124. 1956; Angely, Fl. Paran. 10: 4 & 15. 1957; Moldenke in J. A. Steyerl., Fieldiana Bot. 28: 825 & 826. 1957; Cuatrecasas, Revist. Acad. Colomb. Cienc. 10: 254. 1958; R. C. Foster, Contrib. Gray Herb. 184: 39. 1958; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Biol. Abstr. 33: 1215. 1959; Moldenke, Résumé 38, 47, 69, 73, 76--78, 84, 106, 112, 115, 117, 119, 126, 249, 279, 286, 288, 292, 293, 324, 327, 328, 351, & 491. 1959; Moldenke, Résumé Suppl. 1: 5, 16--18, 20, 22, & 23. 1959; Reitz, Sellowia 11: 31 & 131. 1959; Soukup, Biota 2: 303. 1959; Angely, Fl. Paran. 16: 77. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 877--879 (1960) and imp. 3, 2: 401 & 402. 1960; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960; Angely, Fl. Paran. 17: 24. 1961; Reitz, Sellowia 13: 72 & 90. 1961; Tamayo, Bol. Soc. Venez. Cienc. Nat. 22: 149. 1961; Eiten in Ferré, Simpos. Sobre Cerrado 194. 1962; Hocking, Excerpt. Bot. A.5: 44. 1962; Moldenke, Résumé Suppl. 3: 12 & 14 (1962), 6: 8 (1963), 7: 5 (1963), and 10: 7. 1964; Angely, Fl. Anal. Paran., ed. 1, 201. 1965; Thanikaimoni, Pollen & Spores 7: 187. 1965; J. A. Steyerl., Act. Bot. Venez. 1: 246. 1966; Dombrowski & Kuniyoshi, Araucariana 1: 15. 1967; Aristeguieta, Act. Bot. Venez. 3: 25 & 37. 1968; Lindeman & Görts-van Rijn in Pulle & Lanjour, Fl. Surin. 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11]: 334--339. 1968; Moldenke, Phytologia 17: 481. 1968; Moldenke, Résumé Suppl. 16: 6. 1968; J. A. Steyerl., Act. Bot. Venez. 3: 96. 1968; Van Donselaar, Meded. Bot. Mus. Rijksuniv. Utrecht 306: 397 & 402. 1968; Lasser, Act. Bot. Venez. 4: 35. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 149, 159, 161, 166, 173, 175, 184--187, 189, & 191. 1969; Moldenke, Phytologia 20: 107, 108, 250, & 418. 1970; Oberwinkler, Pterid. & Sperm. Venez. 8 & 52. 1970; Reitz, Sellowia 22: 137. 1970; Moldenke, Fifth Summ. 1: 74, 89, 120, 127, 131, 132, 134, 143, 172, 180, 184, 187, 189, 200, 369, 422, & 429 (1971) and 2: 496, 499, 501, 513, 514, 579, 589, 591, 635, 638, 961, & 967. 1971; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1161, 1162, Ind. 12 & 28, map 1783. 1972; Anon., Biol. Abstr. 53 (10): B.A.S.I.C. S.196. 1972; Anon., Ind. Bot. Guay. Highl. 25. 1972; Moldenke, Biol. Abstr. 53: 5252. 1972; Moldenke in Steyerl., Maguire, & al., Mem. N. Y. Bot. Gard. 23: 850. 1972; Moldenke, Phytologia 24: 343, 344, & 456 (1972), 25: 244 (1973), 26: 178 & 230 (1973), 28: 435 & 440 (1974), 29: 91, 317, 321, & 329 (1974), and 30: 35, 106, 124, & 322. 1975; Schinini, Bol. Soc. Argent. Bot. 16: 351. 1975; Moldenke, Phytologia 31: 383, 386, 392, 397, 404, 405, & 408 (1975), 32: 336 & 461 (1975), 33: 27, 189, & 191 (1976), and 34: 256, 259, 275--277, & 395. 1976; Anon., Biol. Abstr. 61: ACl.718. 1976; Moldenke, Phytologia 35: 307 & 316. 1977.

Illustrations: Schnitzl., Iconogr. 1: pl. 46, fig. 1. 1845; Baillon, Hist. Pl. 12: [397]. 1894; Ruhl. in Engl., Pflanzenreich 13 (4-30): 268, fig. 38. 1903; Pilg. in Engl. & Prantl, Nat. Pflanz-

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This common and very variable species is based on a Desfontaines collection from Cayenne, French Guiana, in the Lamarck herbarium at Paris. *Paepalanthus caulescens* φ *humilis* Kunth is apparently based on Sellow 1292 in the Berlin herbarium, *P. surinamensis* Miq. is based on Hostmann 1002 in the Utrecht herbarium, and *Syngonanthus caulescens* f. *minor* Ruhl. seems to be based on Versteeg 738, also at Utrecht.

The *Eriocaulon caulescens* credited to "Hook. f.", to Hooker & Thomson, and to Steudel belongs in the synonymy of *Eriocaulon atratum* var. *major* Thwaites, while *E. caulescens* Willd is a synonym of *Paepalanthus pilosus* (H.B.K.) Kunth. The *Eriocaulon splendens* var. γ Bong., often included in the synonymy of *Syngonanthus caulescens*, seems better placed in that of *S. glandulosus* Gleason; *Paepalanthus procerus* Klotzsch is now known as *S. caulescens* var. *procerus* (Klotzsch) Moldenke; and *Paepalanthus caulescens* var. *b* subvar. γ Körn. is *S. caulescens* var. *angustifolius* Moldenke. It is very possible that the Hatschbach 24562, Reitz 5343, and Reitz & Klein 11593, cited below, may also actually be var. *angustifolius* because of their extra slender, thin, ascending cauline leaves. W. R. Anderson 9760 is a remarkably dwarf plant and may represent Ruhland's f. *minor*. Line drawings of floral parts are included on the Berlin sheets of Clausen 173, Martius s.n., and Sellow 1296 & 1394 and were probably made by Ruhland.

Recent collectors describe *S. caulescens* as a perennial herb, 10—50 cm. tall, with "neat" large rosettes of dull-green leaves, the inflorescences erect, cream-color, 15—20 cm. tall, the flower-heads "white", "off-white", "gray-white", "grayish-white" or "light-gray", almost globose, the fruiting-heads light-brown, and the flowers white. Ruiz-Terán & López-Palacios refer to it as a "Hierba brevicaulescente, la porción foliada de 3—4 cm. de largo. Hojas subelíptico-oblongas, $\frac{1}{2}$ 17 x 3 mm., verde obscuras y virtualmente glabras por la haz, algo más claras y aplicado-pilosas por el envés. Escapos de 4—8 cm. de largo."

Recent collectors have found the plant growing in mountain forests, marshy campos, swamps, wet meadows, bogs and places partly covered by water, open marshes with the watertable at the surface, very wet ground, low campo swamps, swampy meadows, sloughs, water pools on campos, wet places in gallery forests, cerrado and burned-over cerrado, wet ground on lower cutover sandy slopes, periodically flooded places, small campos on flat hilltops, "en patanos", as well as in and around "morichals" with standing water

dominated by groves of Mauritia minor or M. flexuosa, often in light grayish-brown soil; also at the edges of lakes, along the marshy edges of ponds and slow-flowing streams, on streambanks, creek banks, wet or white sand savannas, moist sandy banks over rocks, the rocky edges of rivers, and sandy wet creek-bank savannas, in "brejo", beside small streams, on campos and wet campos, on quartzite, and on granite rock in forested hills, standing in stagnant water, submerged in water, or in waterfalls, at altitudes of 65—1600 meters, flowering from August to June, and fruiting from November to May, August, and September. Maguire found it "locally abundant in meadows near streams"; Maguire, Wurdack, & Bunting refer to it as "frequent in morichal and lagunas"; the Maguires report it "common along streams in wet places", while Steyermark & Wurdack found it "locally abundant on drier mud". Schulz encountered it "on granite flats [which are] moist most of the year"; Anderson found it "by streams with roots in water" and "in gallery forest along streams and brejo (sedge meadows) with cerrado on slopes above, sandy soil and sandstone rocks"; Anderson & his associates encountered it "in wet sand in an area of very rocky sandstone hilltops with occasional wet spots". Irwin and his associates found it growing "in shallow water of cerrado seep in an area of gallery forest and adjacent cerrado", "in open places in cerrado in areas of cerrado with outcrops and gallery forest", "on wet campo in area of gallery forest and adjacent cerrado", and "in wet ground of valley flats, capoeira with grazed grasses near swampy creek margins".

Fosberg refers to S. caulescens as "rare in marshy ground in depressions around morichal" and "occasional on mineral soil bank in open grassy bogs". The Eitens encountered it "in open marsh along brook", "in the water at open brookside or in soaking soil alongside", "in sedge meadow on slight slope to river plain", and "in soaking soil at brookside, growing on a clump of soil that fell from the edge of the brook gully". These splendid collectors also found it growing "in soaking dark mud at open edge of pond made by damming a stream" and "in soaking soil at brookside". Hatschbach and his colleagues found it in "Lageados umidos proximo a filetes de água"; Schulz and his associates in "sitio pantanoso, valle muy húmedo"; Reitz & Klein in "banhado de campo" and "na água corrente"; and Schinini in "borde de estero" and "en campo con Butia yatay en terreno anegadizo".

Vernacular names reported for this plant are "capim manso", "capipoatinga", "gravatá manso", and "semprevivas do campo".

Gleason, in his unpublished Flora of British Guiana, describes S. caulescens as follows: "Stems 2—3 dm. long, sparsely branched or simple, nearly glabrous; leaves scattered, broadly linear to oblong, 2—3 cm. long, 3—6 mm. wide, pubescent, spreading, the upper crowded and subtending the umbel; peduncles numerous, 3-costate, strongly twisted, glabrous or pubescent, 5—15 cm. long; sheaths hirsute, 2—3 cm. long; heads subglobose, 4—6 mm. wide; bracts nearly white, acute, glabrous." At the time when he wrote this description "No specimens has been seen from British Guiana",

but he gives the overall distribution as "Colombia to French Guiana, south to Paraguay and Bolivia". In his key he separates the three obviously caulescent species from the Guiana area known to him as follows:

1. Subtending bracts present; leaves 1 mm. wide or less.
 2. Principal leaves about 15 mm. long, very thin and lax; peduncular sheaths acuminate.....S. anomalus.
 - 2a. Principal leaves about 5 mm. long, firm, prominently nerved; peduncular sheaths obtuse.....S. brevifolius.
- 1a. Subtending bracts none; leaves 2—5 mm. wide.....S. caulescens.

Silveira (1928) comments that "Caulis brevissimus vel usque 12 cm altus. Caeterum ut in descriptione Koernickeane, in 'Flora Brasiliensi', Martii". Macbride (1936) gives its distribution as "South America generally". Miquel (1847), in describing his Paepalanthus surinamensis, says "Paepalanthus caulescenti Kunth..... affinis. Caulis basi radicans suberectus 25 cent. longus, totus foliorum basibus obiectus interque eas floccoso-pubescentis, e basi ramulos parvos foliis dissitis minutis instructos exserens. Folia 4—5 cent. longa, 5—6 mm. lata, laete viridia, plana vel complicata, apice ad lentem subcalloso-emarginata. Pedunculi in apice caulis numerosissimi, 3—10 cent. longi stricti torti, vaginis 3—3.5 cent. longis striatis ore oblique fissis apice perumper petulis. Capitula juniora elliptica, adulta campanulata, basi fuscule, apice dilute straminea, 3—4 mm. longa."

Bongard (1830) describes the plant as follows, with two unnamed varieties: "Caulescens; caule erecto, simpliciter, folioso; foliis caulinis lanceolatis, pubescentibus; pedunculis fasciculatis vaginisque pubescentibus.....♀ stature humiliore (1/3 praecedentis). Y caule brevissimo, subnullo; pedunculo solitario. — In humidis graminosis inter Barbacenam et St. Juao Brasiliensium".

Kunth (1841) recognized two varieties: ♀ humilis and Y parvifolius. He lists the typical form of the species as from French Guiana and the other two varieties from "in Brasilia meridionali, ille prope Pazaopeba (Sellow)". He states further that "Varietas Y differt nonnisi caule humiliore, densius folioso, foliis minoribus (12—15 lineas longis, 3/4 — 1 lin. latis), pedunculis vaginisque glabriusculis, capitulis paulo minoribus; flores prorsus ut in var. a.....Eriocaulon caulescens Poir. cum Paepalantho nostro congesto compingere voluit. Eriocauli fasciculati fors tantum varietatem giganteam esse, suspicatur Poiret."

Körnigke (1863) describes his various varieties and subvarieties as follows:

Var. a — "vaginis foliisque appresse puberulis vel pubescentibus, praeterea patentibus vel patentissimo-pilosis [Synonymy: Paepalanthus caulescens Kunth, Eriocaulon canescens Poir., E. simillimum Steud., E. caulescens Salzm., E. a Cayenne Willd.] citing G. Gardner 2748 & 4380, Martin s.n., Salzmänn s.n., & Spruce s.n.

Var. b — "vaginis foliisque appresso-puberulis vel pubescentibus,

praeterea non pilosis" [Synonymy: Paepalanthus splendens Mart., Eriocaulon splendens Bong.].

- Var. b subvar. α — "caule rigido; foliis confertis, omnibus vel superioribus lanceolatis, acutis, latiusculis vel latis, arrectis; statura majuscula rarius humiliori" [Synonymy: Eriocaulon splendens var. α Bong.] citing Martius s.n. [in arena humida ad fluvium Rio Gr. de Belmonte], Pohl s.n., Houillet s.n., & Riedel s.n. [inter Barbacena et S. João].
- Var. b subvar. ϕ — "caule rigido vel laxo; foliis saepe remotis, oblongo-linearibus acutis latis patentibus; statura plerumque altiore" [Synonymy: Paepalanthus surinamensis Miq., P. procerus Klotzsch, Eriocaulon surinamense Steud.] citing Hostmann & Kappler 1002, Kegel s.n., Lhotzky s.n., Martius 888 & s.n. [prope Cidade de Ouro Preto], Otto s.n., & Widgren s.n.
- Var. b subvar. γ — "caule laxiusculo; foliis linearibus acuminatis patentissimis confertis, pro ratione longitudinis subangulatis; statura altiore" citing Martius s.n. [in prov. Bahiensis calidis ad fluvium Peruaguassu].
- Var. b subvar. δ — "caule brevi; foliis lati-linearibus densissimis; statura humili" [Synonymy: Paepalanthus caulescens ϕ humilis Kunth, Eriocaulon splendens var. caule humiliore Bong.] citing Martius s.n. [in prov. Bahiae arenosis udis ad fluvium S. Francisci prope Joazeiro] & Sellow s.n. [prope Parnaopeba].
- Var. b subvar. ϵ — "caule brevi stricto; foliis lanceolato-linearibus acutis patentibus, inferioribus fere patentissimis et plerumque densioribus, reliquis paullo remotiusculis; statura humili sed quam antecedentis et sequentis subvarietatis paullo altiore" [Synonymy: Eriocaulon splendens (Bong.) Schnitzl., Paepalanthus caulescens γ parvifolius Kunth p.p.] citing Lund s.n. [Taubaté], Martius s.n. [prope Rio de Janeiro] & s.n. [ad flumen S. Francisci prope Salgado], Pohl s.n. [Goiás], Regnell s.n. [Caldas], Riedel s.n. [Taubaté], Raben 903, Sellow s.n. [São Paulo], Vauthier s.n., Weddell 1039, Widgren s.n., & Wied-Neuwied s.n. and Schlim 193 from Ocana, Colombia.
- Var. b subvar. ζ — "caule brevi vel brevissimo; foliis subanguste linearibus acutis irregulariter patentibus densis vel remotiusculis; statura humili vel humillima" [Synonymy: Paepalanthus caulescens γ parvifolius Kunth p.p., Eriocaulon splendens var. γ Bong., E. geraense Steud., E. subuncinatum Steud.] citing Clausen 173, G. Gardner 2959, 2960, & 3487, Pohl s.n., Raben s.n., Riedel s.n. [Barbacena], & Sellow s.n.

It should be noted here that of these proposed taxa subvar. ϕ is now known as var. procerus (Klotzsch) Moldenke and subvar. γ is now known as var. angustifolius Moldenke. The G. Gardner 2960, cited by Körnicke under var. b subvar. ζ is a cotype collection of

S. fertilis (Körn.) Ruhl.

Uittien & Heyn (1938) comment that S. caulescens is "Extremely variable in habit. Koernicke described several varieties and sub-varieties, but they are connected by intermediate forms. In Suriname two forms are found, a small form with 1—6 cm long stems and 1—2 cm long, 3 mm wide leaves and a larger one with 20—45 cm long stems and 3 cm long, 6 mm wide leaves". For their small form they cite B. W. 7133, Rombouts 214 & 556, and Versteeg 730; for their large form they cite Hostmann & Kappler 1002 (the type of Paepalanthus surinamensis), Kegel 1105, and Rombouts 556. It is very possible that this larger form represents what I call var. procerus (Klotzsch) Moldenke.

Ruhland (1903) cites no specimens at all, but gives the distribution of the species as "In Venezuela, Columbien, Guiana, Bolivien und Brasilien (Provinzen Amazonas, Bahia, Matogrosso, Goyaz, Piauhy, Minas Geraés, Rio de Janeiro u. S. Paulo) und in Paraguay weit verbreitet". He notes that the "Species fere inter omnes variabilissima. Variant praesertim habitus (caulis longus vel brevis, folia patentia vel arrecto-patentia, densa vel remota, lata vel angusta) et indumentum foliorum. Varietates cl. Koernickei formis multis intermediis conjunctae sunt."

Castellanos (1945) cites Pickel 153 from Pernambuco and Dusén 15619, Rambo 34 & 9592, and Thei Ben 7655 from Paraná, Brazil, deposited in the Miguel Lillo herbarium. He cites the species' overall distribution as "Centro-américa por Colombia, Venezuela, Guayanas, Brasil (Amazonas, Pernambuco, Piauhy, Bahia, Goyaz, Matto Grosso, Minas Geraes, Rio Janeiro, São Paulo, Paraná, Rio Grande do Sul), Bolivia, Paraguay y Argentina, alcanzando su límite austral en Uruguay. En Argentina, en la provincia botánica Corrientino-paraguaya (Corrientes & Misiones)." Abbiatti (1946) cites Burkart 7893 from Corrientes; Macbride (1936) cites Killip & Smith s.n. and Weberbauer 4565 from Peru; Eiten (1962) cites Eiten & Eiten 1527, 1748, 1985, & 2348 from Brazil; Goodspeed & Stork (1955) cite Woytkowski 35330 from San Martín, Peru; Silveira (1928) lists A. Silveira 221 from Minas Gerais; Aristeguieta (1968) records it from Anzoátegui and Guárico, Venezuela; and Malme (1901) cites Mosén 1056 & 1057 and Regnell 1.450 from Minas Gerais, Malme 582 from Rio Grande do Sul, and Löfgren 1214 from São Paulo, commenting that "Specimina omnia supra enumerata ad var. b pertinent; subvarietates a cel. Koernicke receptae parum notabiles esse videntur".

Körnicke (1871) cites Warming s.n. [Lagoa Santa] for his var. b subvar. ♀ and Warming s.n. [Palmeira prope Barbacena] for his var. b subvar. ♂. Angely (1957) records the species as cultivated in Brazil.

Some bibliographic corrections should be noted here: The plate 66 cited by Bongard (1830, 1831) for S. caulescens apparently was never published and probably exists only in the Lenin-grad library or herbarium. The Ruhland (1901) work cited above

is sometimes erroneously cited as "1902", the volume title-page date — the pages here concerned were actually issued on July 2, 1901. The Soukup (1959) reference is sometimes erroneously cited as volume "5"; the Steyermark work (1968) is sometimes listed as "1969". Angely's (1972) work bears a "1970" title-page date, but was not actually issued until 1972. The Baillon (1894) work is erroneously dated "1884" by Stapf (1930); the Schnitzlein (1845) work is often cited as "1847", but here again the pages concerning us were issued in 1845. The Moldenke (1940) paper bears the date "1941" on the cover, but was actually published (and deposited in the library of the New York Botanical Garden) on December 31, 1940. Malme's (1901) work is sometimes incorrectly cited as "1903".

The index of Steudel's (1855) work refers to a page "270" for S. caulescens, but this seems to be a typographic error for page 276. The illustration given by Tamayo (1961) labeled "Syngonanthus akurimensis Moldenke" actually depicts S. caulescens instead. Syngonanthus akurimensis [now known as Comanthera kegeliana (Körn.) Moldenke] is a plant of entirely different appearance.

A specimen of the Irwin, Grear, Souza, & Reis dos Santos collection in the Aarhus University herbarium bears a label inscribed "15816" and "Tree ca. 6 m x 12 cm., corolla cream" — this seems to be another case of mixed labels, the proper label for the specimen in question being no. 15876. Cardona Puig 2886 is a mixture with Paepalanthus lamarckii Kunth, Irwin, Prance, Soderstrom, & Holmgren 55312 is a mixture with Paepalanthus oyapockensis Herzog, and Lourteig 2074 is a mixture with something non-ericaulaceous.

The Eiten & Eiten 8492, cited below, is placed here very tentatively. It was collected on the border of a small lake in gallery forest and is said to have been an "herb growing in water". It is far too immature for accurate determination and thus far I have not been successful in getting more material of it for study.

Material of S. caulescens has been misidentified and distributed in some herbaria as Eriocaulon flaccidum Bong., Paepalanthus macaheensis Körn., P. pseudotortilis Ruhl., P. sp., Syngonanthus caulescens var. procerus (Klotzsch) Moldenke, S. glandulosus Gleason, S. glandulosus var. epapillosus Moldenke, Tonina fluviatilis Aubl., and Eleocharis sulcata Nees.

On the other hand, the Martius s.n. [ad fluv. Paraguacá] and Reitz & Klein 11593, distributed as typical S. caulescens, are actually S. caulescens var. angustifolius Moldenke; Irwin, Souza, & Reis dos Santos 8730 is the type collection of f. longipes Moldenke; G. Gardner 2748, Irwin, Souza, & Reis dos Santos 11471, and Lützelburg 357 & 1434 are var. procerus (Klotzsch) Moldenke; A. S. Hitchcock 17075 and Jenman 5287 are Paepalanthus bifidus (Schrad.) Kunth; and Pedersen 9399 & 10095 are probably S. glandulosus var. epapillosus Moldenke.

Additional citations: MEXICO: Veracruz: J. G. Smith 116 (E—2168579), 354 (E—2168580). COSTA RICA: Province undetermined: Pittier 11043 [Cienaga de Agua Buena] (Mu). COLOMBIA: Amazonas-Vaupés: Schultes & Cabrera 14968, in part (Ss), 15406 (Ss, Ss), 15956 (Ss). Boyacá: Schulz, Rodríguez P., & Petit B. 465 (Ld); Uribe Uribe 5179 (N), 5180 (N). Cundinamarca: M. L. Grant 10458 [Herb. Nat. Arb. 216584] (W—2166113); F. W. Pennell 2888 (N, W—1042515). Magdalena: C. Allen 649 (E—1014964, F—1391646), 707 (E—1014970). Meta: F. W. Pennell 1411 (N, W—1041725), 1634 (N); Pinto E. & Sastre 807 (P); Smith & Idrobo 1561a (Ca—963319). Santander: Killip & Smith 15031 (N, W—1360979). VENEZUELA: Amazonas: Maguire & Maguire 35435 (N); G. H. H. Tate 246 (N). Anzoátegui: H. M. Curran 163m (N); Pittier 14295 (Ca—734717). Bolívar: Aristeguieta 2248 (N, Ve—36850), 3706 (N, Ve); Bogner 1069 (Mu); Cardona Puig 2886, in part (W—2195081); Hertel & Oberwinkler 15225b (Mu); Killip 37683 (N); Koyama & Agostini 7267 (N); Lasser 1364 (Ve, W—1950297); López-Palacios 3046 (Ac), 3047 (Ld); B. Maguire 33613 (N); Maguire & Wurdack 35752 (N); Maguire, Wurdack, & Bunting 35909 (N); Moritz 610 (B); Ruiz-Terán & López-Palacios 11337 (Mi); J. A. Steyermark 76055 (Ss), 88759 (N), 98198 (Ld); Steyermark & Gibson 95741 (Ld); Steyermark & Wurdack 45b (N); G. H. H. Tate 246 (N). Carabobo: Pittier 9405 (W—1120698). Guárico: Aristeguieta 4514 (N), 6233 (Ac); G. Davidse 3771 (Ld). Monagas: F. R. Fosberg 45233 (W—2724080); Pursell, Curry, & Kremer 8293 (N). State undetermined: Mayeul-Grisol s.n. (B, N); Otto 941 (B, B, B); E. P. Stevens s.n. (C). GUYANA: C. D. K. Cook 83 (N, S); Guppy 634 [Forest Dept. Brit. Guian. 7649] (K, K, Ut—70394b); S. G. Harrison 736 (K). SURINAM: Hostmann 1002 (B, Ut—395); Irwin, France, Soderstrom, & Holmgren 55265 (N), 55312, in part (N, N); Rombouts 555 (Ut—44054a); J. P. Schulz 10424 (N); Van Donselaar 3673 (N); Versteeg 738 (Ut—396). FRENCH GUIANA: Collector undetermined s.n. (B); Hallé 511 (N, P, W—2756370); Hooek s.n. [11 Aout 1962] (P, P); Leprieur 225 (B); Martin s.n. [Cajenna] (B); Mélinon 175 [339] (N, N). PERU: Amazonas: Wurdack 1082 (W—2403676). Loreto: Killip & Smith 28683 (N, W—1462193); Klug 2866 (W—1457251). San Martín: Klug 3270 (M1, W—1457680); Woytkowski 35330 (Ca—13669). BRAZIL: Amapá: Black 49-8249 (Z); Cowan 38674 (N); W. A. Egler 1429 [Herb. Mus. Goeldi 24585] (Bm); Irwin, Murça Pires, & Westra 48645 (N). Amazonas: Lützelburg 20940 (Mu); Spruce 930 (Mu); Trall 1159 (P, P). Bahia: Lützelburg 241 (Mu); Martius s.n. [in arena humida ad fluv. Belmonte, 1818] (Mu), s.n. [ad fluv. S. Franc. prope Foa-zeiro] (Mu), s.n. [ad fluv. S. Franc. prope Salgado] (Mu); Murça Pires 3408 (N, Z). Distrito Federal: Héringer 6780 (B); Irwin, Gear, Souza, & Reis dos Santos 15876 ["15816"] (Ft, N, W—

2759055). Goiás: G. Gardner 3487 (B, W—936275), 4358 (P); Hatschbach & Ramamoorthy 38209 (Ld); Irwin, Grear, Souza, & Reis dos Santos 14410, in part (Ac, N, W—2759019); Irwin, Maxwell, & Wasshausen 21424 (Ld, N), 21630 (Ac, Ld, N, N); Irwin, Souza, & Reis dos Santos 9757 (Ac, N); Murça Pires & Black 2416 (Ss, W—2252809). Guanabara: Martius s.n. [prope Sebastianopolis] (Mu). Maranhão: Glaziou s.n. [Maranhão] (P). Mato Grosso: W. R. Anderson 9760 (N); Archer & Gehrt 120 (W—1740803); Eiten & Eiten 8492 (W—2757735), 8768 (Ld, N, W—2615848); Goldsmith 61 (K); Harley, Souza, & Ferreira 10405 (Ac, N); Hatschbach 24562 (Ld, N, S), 33991 (Gz); Hatschbach, Anderson, Barneby, & Gates 36052 (Ld, N); Irwin & Soderstrom 6478 (Ac, N); Krapovickas, Cristóbal, & Ahumada 14084 (Ld); Philcox, Ferreira, & Bertoldo 3411 (K); Prance, Lleras, & Coêlho 19232 (Ld); Ramos & Souza R. & S. 127 (Ld, N). Minas Gerais: Anderson, Stieber, & Kirkbride 35146 (N); P. Clausen 12 (P), 173 (B, B); Glaziou 15679 (N, W—1124413), 19992 (C); Henschen 1.450 [3/4/1868] (W—936248); Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 27824 (Ld, N, W—2759056); Irwin, Harley, & Onishi 28843 (Ld, N); Irwin, Reis dos Santos, Souza, & Fonsêca 23281 (Ld, N); Langsdorff s.n. (B, Ut—394); Lhotsky 34 (B); Macedo 2853 (S); Martius s.n. [prope Cidade de Ouro Preto] (Mu); Mello Barreto 943 (N), 2587 [Herb. Jard. Bot. Belo Horiz. 10716; Herb. U. S. Nat. Arb. 236382] (W—2109995), 4658 [Herb. Jard. Bot. Belo Horiz. 17558; Herb. U. S. Nat. Arb. 236405] (W—2121714), 4674 [Herb. Jard. Bot. Belo Horiz. 17527; Herb. U. S. Nat. Arb. 236402] (W—2121715); Mendes Magalhães 3192 (W—2124348); Occhioni 5589 [Herb. Cadeira Bot. 14633] (Ld); E. Pereira 2779 [Pabst 3615; Herb. Brad. 3837] (Sm), 2784 [Pabst 3620; Herb. Brad. 3839] (Sm); L. Riedel 291 (B); Sellow 1296 (B, B), s.n. [Rio das Pedras, 1820] (B); Widgren 824 (W—200754); Williams & Assis 6551 (Ca—74433, W—1932747). Pará: Black 50-9966 (Be—54852); Black & Ledoux 50-10380 1/2 (Be—61676), 50-10480 1/2 (Z); Black, Ledoux, & Stegemann 52-14257 (Be—73986), 52-14355 (Z); W. A. Egler 245 [Black 15531] (Bs), 455 (Bs); Egler & Raimundo s.n. [W. A. Egler 1222; Herb. Mus. Goeldi 24269] (Bm); Fröes 29764 (Hk, Hk); Sick s.n. [Herb. Brad. 4702] (Sm). Paraná: Brade 19627 (Ja—65775); Braga 98 [Herb. Inst. Hist. Nat. 5269] (Mm, W—2369354); A. Castellanos 21869 [Herb. Mus. Nac. Rio Jan. 126569] (Ac); Dombrowski 81 [Herb. Inst. Hist. Nat. 6792] (Ac, Lw), 219 [Herb. Inst. Hist. Nat. 8073] (Lw), 524 (Ac), 2098 [Kuniyoshi 1824] (Ld), 2313 [Kuniyoshi 2055] (Ld); Dombrowski & Saito 1031/848 (Ac); Dusén 10433 (W—1280825), 15619 (W—1470491); Freitas 3231 (Rd—14854); Gurgel 106 (Ja—46335, Ja, Ja); Hatschbach 3758 (Sm), 4368 (Rd—15592), 4955 (Sm), 8537 (Lw), 22504 (Ld, N), 22887 (Ac), 27194 (Ac), 27661 (Ld), 28490 (Ld), 38054 (Ld); Hatschbach & Lan-

ge 5290 (Sm), 5311 (Sm), 5316 (Sm); Hatschbach & Moreira 6808 (Bm); Hatschbach, Smith, & Klein 28243 (Ac); Krapovickas, Cristóbal, & Maruffak 23620 (Ld); Kummrow 1065 (Ld); Lindeman & Haas 1122 (Ld); Reitz & Klein 17472 (Ac, N), 17620 (Ac, N, W—2758135); E. Santos 2162 [Sacco 2368; Herb. Mus. Nac. Rio Jan. 126554] (W—2639604); Smith, Klein, & Hatschbach 14549 (Ac); Stellfeld 1519 (W—2527786). Pernambuco: Pickel 153 (B), 2257 (W—1473257), s.n. [Pambos, Jan. 1931] (Ba, W—1523237). Piauí: G. Gardner 2959 (N, W—936274). Rio de Janeiro: Dusén 1906 (W—1055750, W—1470461); Glaziou 6447 (W—1124113), 9002 (P), 11632 (P), 12249 (N, Pd, W—1124125), 17305 (C); Pereira 395 [Herb. Brad. 6113] (Bd); Rose & Lutz 39 [Herb. Mus. Nac. Rio Jan. 52488] (Gg—366040). Rio Grande do Sul: O. Camargo s.n. [Rambo 61599] (S); Leite 140 (Ja—43992), 2063 (A); Rambo 34685 (Gg—354583), 34865 (N), 45444 (Rd—12295), 46178 (Rd—12294), 52140 (B); A. R. Schultz 325 (W—1978446), 453 (W—1978447); Sehnm 2450 (Gg—356425). Roraima: Black 51-12680 (Be—70495); Maguire & Maguire 40100 (N); Prance, Forero, Pena, & Ramos 4488 (Ld, N, S); Ule 7610 [M.G. 12727] (K, Ok). Santa Catarina: Grossmann 144 (Gt), 147 (Gt); Klein 3470 (Ac), 3866 (Ld); Mello Filho 681 [Herb. Mus. Nac. Rio Jan. 49606] (W—2639605); Rambo 49585 (Bl—105064, Vi, W—2055044); Reitz 5343 [Herb. Barb. Rodr. 6346] (N, N); Reitz & Klein 5138 (W—2252157), 6008 (Sm), 11982 (Ld), 16405 (Ld); Schwacke s.n. [10/VII/1885] (P); Smith & Klein 7469 (W—2248751), 8186 (Ok), 8648 (W—2248753), 9884a (W—2248757), 10653 (Ok), 11097 (Ok), 13689 (Ac), 13741 (W—2451596), 13762 (W—2451592), 15502 (Ac); Smith, Klein, & Hatschbach 15694 (Ld, N); Smith & Reitz 14314 (Ac, N); Smith, Reitz, & Caldato 9585 (Ok); Smith, Reitz, & Sufridini 9390 (Ok); Ule 582 (Hg). São Paulo: Black 51-11028 (Be—68873), 51-11048 (Z), 51-11060 (Z); Brade 6580 (Mu), 6592 (Mu); Burchell 3780 (T); Campos Novas 1152 (W—389982); G. Eiten 1631 (N); Eiten & Eiten 1748 (N), 1937 (N), 1985 (N), 2348 (N), 5107 (W—2426086); Eiten, Eiten, & Mimura 5887 (W—2757749); Eiten & Machado de Campis 1527 (N), 3426 (N); F. R. Fosberg 4331 (Ld); Glaziou 9002 (N); Grossmann 142 (Gt); Guillemin 520 (P); F. C. Hoehne 612 (Mu, N); Löfgren 151 (P); A. Lutz 309 [Herb. Lutz 309] (Ja), 836 [Herb. Lutz 836] (Ja), s.n. [Herb. Lutz 688] (Ja); Lutz & Lutz 44 [Herb. Lutz 1735] (Ja), 225, in part [Herb. Lutz 1217, in part] (Ja); Mimura 32 (N, W—2404890), 81 (N, W—2404917), 268 (N); Pabst, Burkart, & Burkart 9570 [Herb. Brad. 60552] (Gz); L. Riedel 1480 (B, Ut—392); Sellow s.n. (Ut—393). State undetermined: Glaziou 14357 (N), s.n. (W—1123402); Löfgren 1214 (P); Martius 888 (B, M, Mu), 896 (Mu), s.n. [Brasilia] (B, B, B); J. E. Pohl 2396 (B), 5071 (B), s.n. [in Brasilia] (Mu, Mu, Mu); L. Riedel 1482a (B); Sel-

low 100 (B), 1292 (B), 1394 (B), 1399 (B), 1462 (B), 4348 (B); Sidney 1435 [Lago Leo; Onishi 656] (Ld); Tamberlik s.n. [Brasil] (V-7781). MARAJO ISLAND: Huber 2666 (Ut-1682). BOLIVIA: La Paz: R. S. Williams 301 (N, Z). Santa Cruz: Kuntze s.n. [Yapacani, VI.92] (W-701890); J. Steinbach 6908 (Ca-306500). PARAGUAY: Balansa 566 (P); Fiebrig 4671 (Mu); Hassler 1061 (N, P), 3645 (Ca-944903, N), 4709 (Ca-940639, N, V-3010), 6697 (Ca-944901, N), 8483 (Ca-944902, N), 12532 (Ca-930356, N, W-1057419); Jørgensen 4174 (N, N, W-1571235, W-1692478); Krapovickas & Cristóbal 13485 (Ld); Lourteig 2074, in part (S); Morong 249 (W-819023), 331 (C, Ca-2425, M1, W-45351, W-936246); Pedersen 3252 (W-2169508), 9400 (N); Schinini 5803 (Ld), 10919 (Ld); Sparre & Vervoorst 2141 (S); Woolston 1187 (S, W-2321828). ARGENTINA: Corrientes: Cabrera 11711 (Vi, W-2198011); Krapovickas, Cristóbal, Carnevali, Quarín, González, & Isikawa 24178 (Ld); Krapovickas, Cristóbal, Schinini, Arbo, Quarín, & González 26426 (Ld); Krapovickas, Cristóbal, Schinini, & González 24618 (Ac); Pedersen 496 (W-2122501), 3088 (S, W-2169499); Schinini 7682 (Ld); Schinini, Arbo, González, Ishikawa, & Tressens 8331 (Kh), 8452 (Gz); Schinini & Quarín 8543 (Ld); G. J. Schwarz 340 (Ut-77572b). Misiones: Pedersen 3252 (S). CULTIVATED: Germany: F. C. Hoehne 32 (Mu). MOUNTED ILLUSTRATIONS: Castell. in Descole, Gen. & Sp. Pl. Argent. 3: pl. 20. 1945 (M); drawings by Körnicker (B, B); drawings by Kunth (B).

SYNGONANTHUS CAULESCENS var. ANGUSTIFOLIUS Moldenke, Bull. Torrey Bot. Club 68: 70. 1940.

Synonymy: Paepalanthus caulescens var. b subvar. γ Körn. in Mart., Fl. Bras. 3 (1): 466-468. 1863. Paepalanthus caulescens var. β subvar. γ Kunth ex Moldenke, Phytologia 31: 403-404, in syn. 1975.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 466-468. 1863; Moldenke, Bull. Torrey Bot. Club 68: 70. 1940; Moldenke, Alph. List Cit. 1: 266. 1946; Moldenke, Known Geogr. Distrib. Erioc. 5 & 57. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 61 & 212. 1949; Moldenke, Phytologia 4: 302. 1953; Moldenke, Résumé 69 & 491. 1959; Moldenke, Fifth Summ. 1: 120 (1971) and 2: 961. 1971; Moldenke, Phytologia 28: 435 & 440 (1974), 31: 386 & 404 (1975), and 34: 275. 1976.

This variety differs from the typical form of the species in its uniformly longer and narrower leaves, which are 2-3.5 cm. long and 0.2-2 mm. wide, gradually attenuate to the sharply acute apex. It is based on Haught 2747 from Meta, Colombia.

It should be noted here that the original publication of this taxon is dated "1941" on its cover, but was actually received in at least the library of the New York Botanical Garden on December 31, 1940. Körnicker's subvariety, listed in the synonymy above, appears to be based on Martius s.n. from "ad fluv. Peruaguaçú",

Bahia, Brazil, in the Munich herbarium. Recent collectors have found the variety growing in berjo (sedge meadow), wet campos, swamps, and wet places in general, flowering and fruiting in January, April, August, and December, at 750 meters altitude, and describe the plant as an herb with white flowers and cream-colored fruit. Dombrowski refers to it as "frequent". The Hatschbach 1761 and Leite 101, cited below, were previously erroneously cited by me as typical S. caulescens (Poir.) Ruhl.

Citations: COLOMBIA: Meta: Haught 2747 (Ca--737846--isotype). BRAZIL: Bahia: Martius s.n. [ad fluv. Peruaguacú] (Mu, Mu). Mato Grosso: Hatschbach 32338 (Ld). Paraná: Dombrowski 5582 (Ld), 5873 (Ld); Hatschbach 1761 (N). Rio Grande do Sul: Leite 101 (N). Rondônia: Cordeiro 838 (Ld). Santa Catarina: Reitz & Klein 11593 (Z).

SYNGONANTHUS CAULESCENS var. BELLOHORIZONTINUS Alv. Silv., Fl.

Mont. 1: 358 [as "bello horizontina"]. 1928; Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946.

Synonymy: Syngonanthus caulescens var. bello horizontina Alv. Silv., Fl. Mont. 1: 358. 1928. Syngonanthus caulescens var. bello-horizontina Alv. Silv., Fl. Mont. 1: 416. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 358 & 416. 1928; Moldenke, Known Geogr. Distrib. Erioc. 17 & 57. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 91 & 212. 1949; Moldenke, Phytologia 4: 302. 1953; Moldenke, Résumé 106, 351, & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 635 & 961. 1971; Moldenke, Phytologia 34: 259. 1976.

This variety differs from the typical form of the species in having its stems 13--40 cm. tall, erect, and the leaves acute at their apex. It is based on A. Silveira 219 from "In humidis prope Bello Horizonte", Minas Gerais, Brazil, collected in 1903 and deposited in the Silveira herbarium. Hatschbach encountered it "junto a correjo do brejo", flowering and fruiting in May.

Citations: BRAZIL: Goiás: Hatschbach 36758 (Z).

SYNGONANTHUS CAULESCENS var. DISCRETIFOLIUS Moldenke, var. nov.

Haec varietas a forma typica speciei foliis caulinibus distincte alternis perspicue discretis adscendenti-patentibus recedit.

This variety differs from the typical form of the species in having its stem-leaves distinctly alternate, conspicuously and rather widely separated from each other, ascending-spreading, and sharply acute apically.

The type of the variety was collected by B. G. S. Ribeiro (no. 1397) in the Serra dos Carrajás, Pará, Brazil, on June 28, 1976, and is deposited in my personal herbarium. The collector describes the plant as 10 cm. tall, but most of the plants on the type sheet are up to 40 cm. tall. He speaks of the flowers as white. It should be noted that this collection (at least insofar as the type specimen is concerned) contains a large amount of extraneous material of a Panicum sp., etc.

[to be continued]